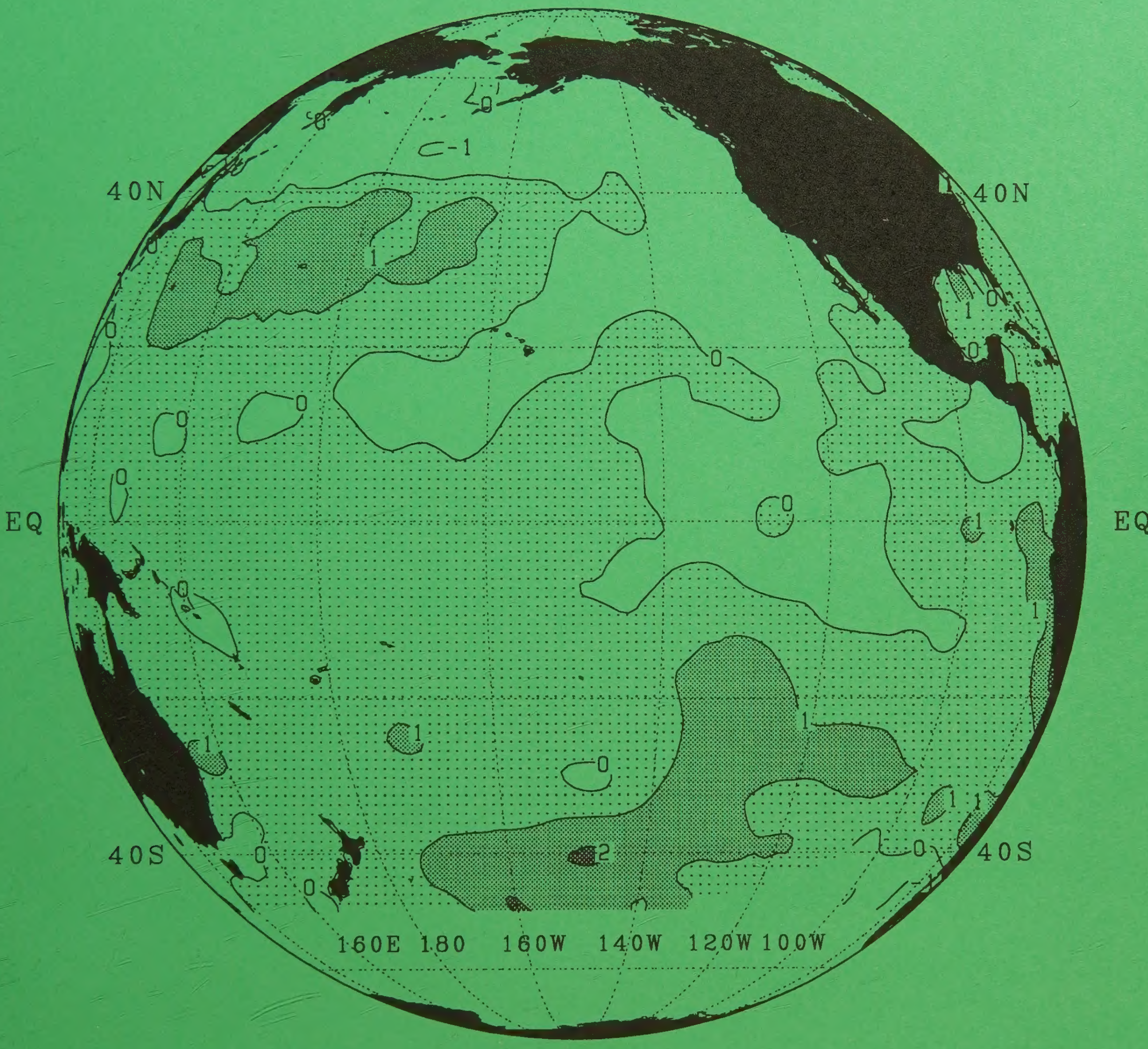
気象庁海洋月報

Monthly Ocean Report
March 2002 (No. 111)



Climate and Marine Department

Japan Meteorological Agency

気象庁 気候・海洋気象部

平成14年3月

気象庁海洋月報は、気象庁 気候・海洋気象部 海洋気象情報室で作成しています。
本月報に関する問い合わせは、
〒100-8122　東京都千代田区大手町１-３-４　気象庁 気候・海洋気象部 海洋気象情報室まで。
電　話 (03) 3212-8341 (内線 5127、5166)
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電子メール ocean@hq.kishou.go.jp

Monthly Ocean Report is prepared by the Office of Marine Prediction, Climate and Marine Department, Japan Meteorological Agency.

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e-mail : ocean@hq.kishou.go.jp

表紙は、2002 年 3 月の太平洋の月平均海面水温偏差図です。
陰影部は、平年より高温の海域を示しています。

The figure on the front cover shows the monthly mean SST anomalies for March 2002 in the Pacific Ocean.
Areas of positive anomalies are shaded.

訂正 (CORRECTION)

平成 14 年 4 月 22 日

平成 13 年 1 月号(No. 97)～平成 14 年 2 月号(No. 110)の気象庁海洋月報に掲載された「第１表　太平洋熱帯域の大気及び海洋の監視指数」の SOI（南方振動指数）及び TAHITI、DARWIN の海面気圧平年偏差の値に誤りがありました。

今回お送りした気象庁海洋月報（平成 14 年 3 月号、No. 111）には、訂正済の 2000 年 1 月から 2002 年 3 月までの値を掲載しました。併せて 1999 年 1 月から 2002 年 3 月までの正しい値の表をお送りしますので、お詫びして訂正致します。

問い合わせ先：
気象庁 気候・海洋気象部 海洋気象情報室
電　話：　(03) 3212-8341 (内線 5127・5166)
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電子メール：　ocean@hq.kishou.go.jp

22 April 2002

In our publications, “Monthly Ocean Report of JMA” from January 2001 issue (No.97) to February 2002 issue (No.110), it was found that the values of Southern Oscillation Index (SOI) and sea level pressure anomalies at DARWIN and TAHITI in Table 1, “Atmospheric and Ocean monitoring indices in the tropical Pacific Ocean” were incorrect.

The correct values of SOI and sea level pressure anomalies from January 2000 to March 2002 are listed in Table 1 in the publication of March 2002 (No.111), which is enclosed herewith. In addition, please find attached Table 1 with the correct values of SOI and sea level pressure anomalies from January 1999 to March 2002.

It would be grateful if you could replace them with the correct values.

Contact:

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海況の特徴（２００２年３月）

日本近海の海況

海面水温は、千島列島周辺から北海道の太平洋沿岸、三陸沖にかけて、及び九州西岸で平年より 0.5℃以上低く、北海道の太平洋沿岸と三陸沖では－１℃を超える負偏差が見られた（第４図）。

黒潮は、九州東方を離岸して流れ、四国から紀伊半島にかけて接岸した後、東海沖を東北東に流れ、三宅島の北を通過していた。その後、房総半島に接岸して、36° N、143° E付近で東南東に向きを変えて流れていた（第９図）。

太平洋の海況

太平洋赤道域の海面水温は、160° Eから170° Wにかけてと105° W以東で平年より0.5℃以上高く、エクアドル・ペルー沖では＋１℃を超える正偏差が見られた。

北太平洋の海面水温は、20° N から 40° N の 145° E から 165° W で平年より 1℃以上高かった。一方、45° N に沿った北米西岸から日付変更線付近までと 170° E 以西では、－0.5℃を超える負偏差が見られた（第１７図）。

Highlights March 2002

Seas adjacent to Japan

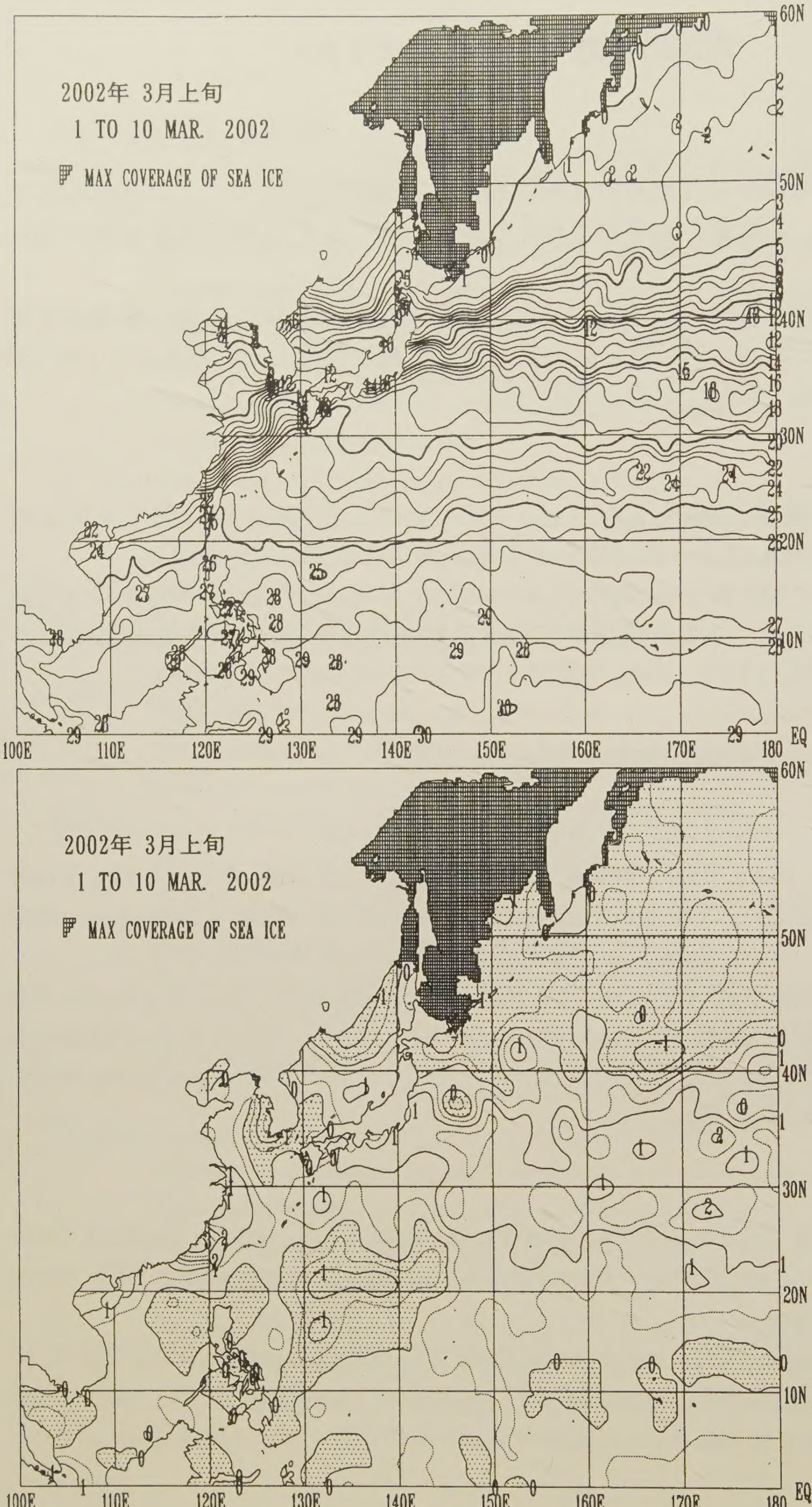
SSTs were more than 0.5℃ below normal from the seas around the Kuril Islands to east of Hokkaido, off Sanriku and west of Kyushu. Negative SST anomalies exceeding -1℃ were found east of Hokkaido and off Sanriku (Fig. 4).

The Kuroshio passed off Kyushu and close to coasts from Shikoku to the Kii Peninsula, and flowed ENE-ward off Tokai through the month. Then it passed north of Miyake Island and close to the Boso Peninsula, and turned ESE-ward near 36°N, 143°E through the month (Fig. 9).

Pacific Ocean

In the equatorial Pacific, SSTs were more than 0.5℃ above normal from 160°E to 170°W, and east of 105°W. Positive SST anomalies exceeding +1℃ were found off Ecuador and Peru.

In the North Pacific, SSTs were more than 1℃ above normal from 145°E to 165°W between 20°N and 40°N. Negative SST anomalies exceeding –0.5℃ were found from west of North America to the date line and west of 170°E along 45°N (Fig. 17).

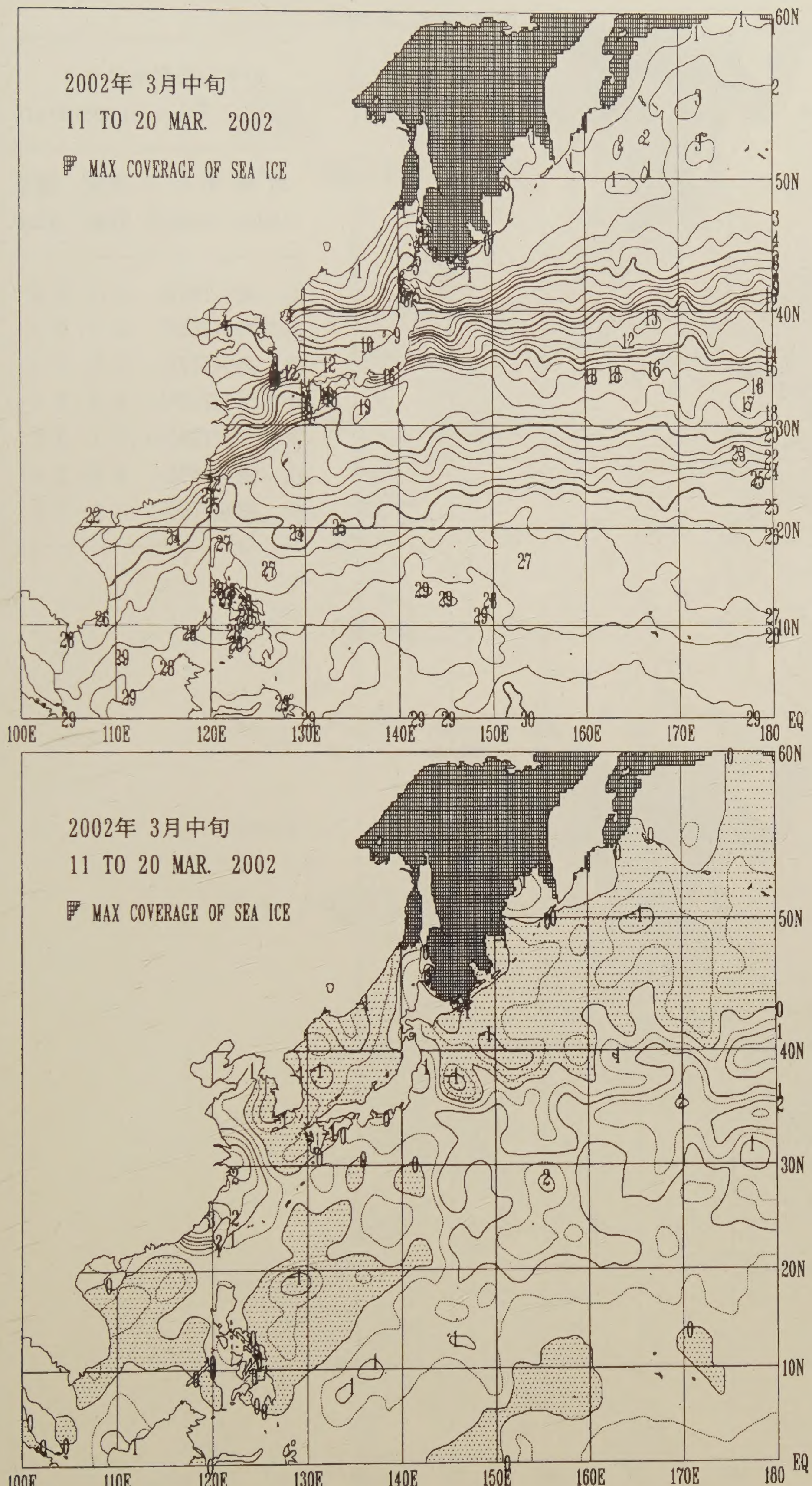


旬平均沿岸水温 (℃)
Coastal Water Temperature

地点名 (Index Number)	水温 Temp.	偏差 Anom.
石　垣 (47918)	21.9	0.2
御前崎 (47655)	11.9	0.5
八丈島 (47678)	18.2	1.3
小名浜 (47598)	8.9	-0.1
宮　古 (47585)	6.5	0.1
江　差 (47428)	6.6	0.8
浜　田 (47755)	12.5	0.7

第1図 北西太平洋旬平均海面水温図 (上) 及び偏差図 (下) (2002年 3月上旬)

Fig. 1 Ten-day mean SST (top) and anomalies (bottom) in the western North Pacific for the 1st ten-day period in MAR 2002. Anomalies are computed from the JMA climatology (1971-2000). Contour interval is 1°C and additional anomaly contours of 0.5°C are shown by broken lines. Negative anomalies are spotted.

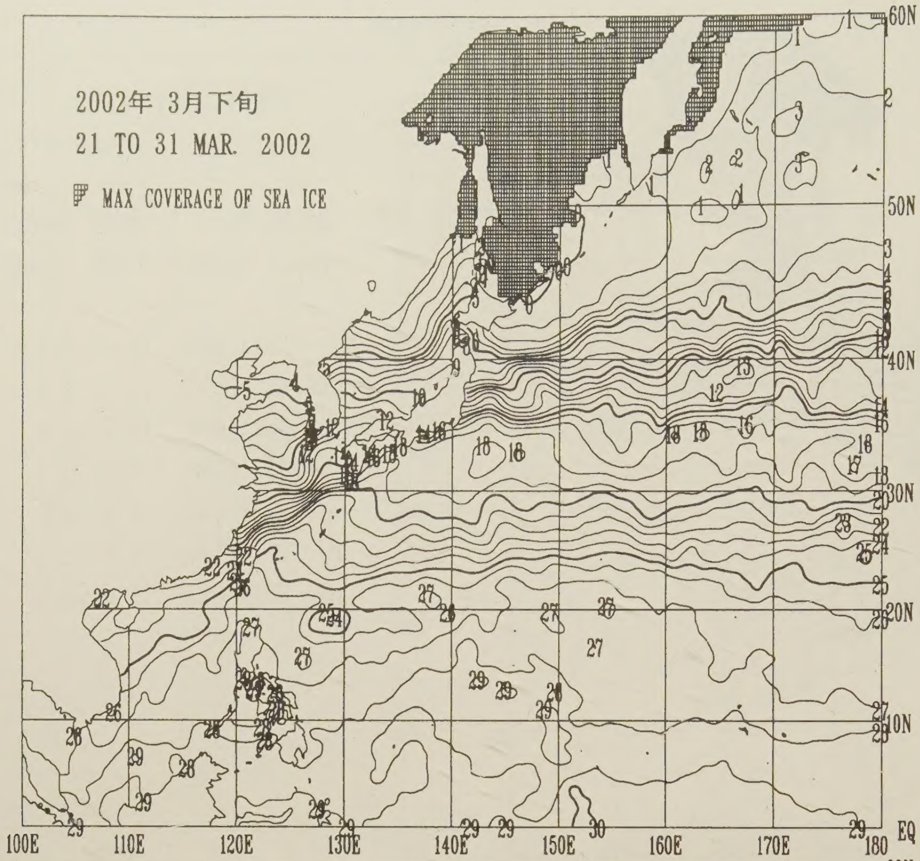


旬平均沿岸水温(℃)
Coastal Water Temperature

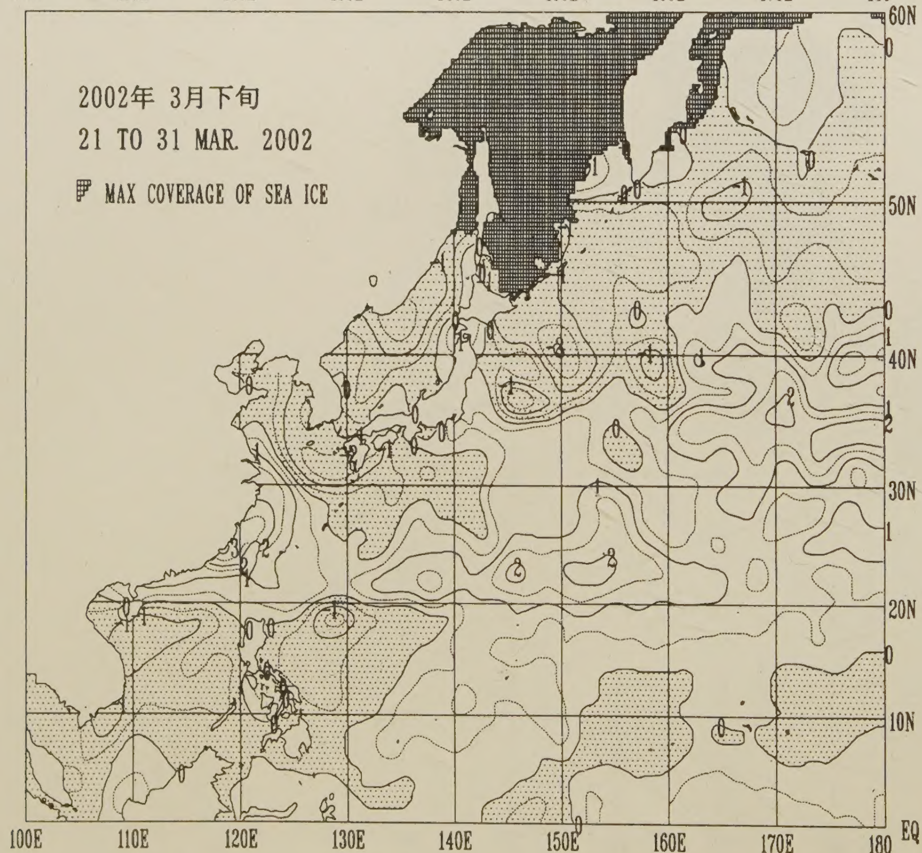
地点名 (Index Number)	水温 Temp.	偏差 Anom.
石　垣(47918)	22.5	0.1
御前崎(47655)	12.5	0.3
八丈島(47678)	18.8	1.4
小名浜(47598)	8.9	-0.1
宮　古(47585)	6.9	0.7
江　差(47428)	7.7	1.6
浜　田(47755)	13.9	1.5

第2図 北西太平洋旬平均海面水温図(上)及び偏差図(下) (2002年 3月中旬)

Fig. 2 Ten-day mean SST (top) and anomalies (bottom) in the western North Pacific for the 2nd ten-day period in MAR 2002. Anomalies are computed from the JMA climatology (1971-2000). Contour interval is 1°C and additional anomaly contours of 0.5°C are shown by broken lines. Negative anomalies are spotted.



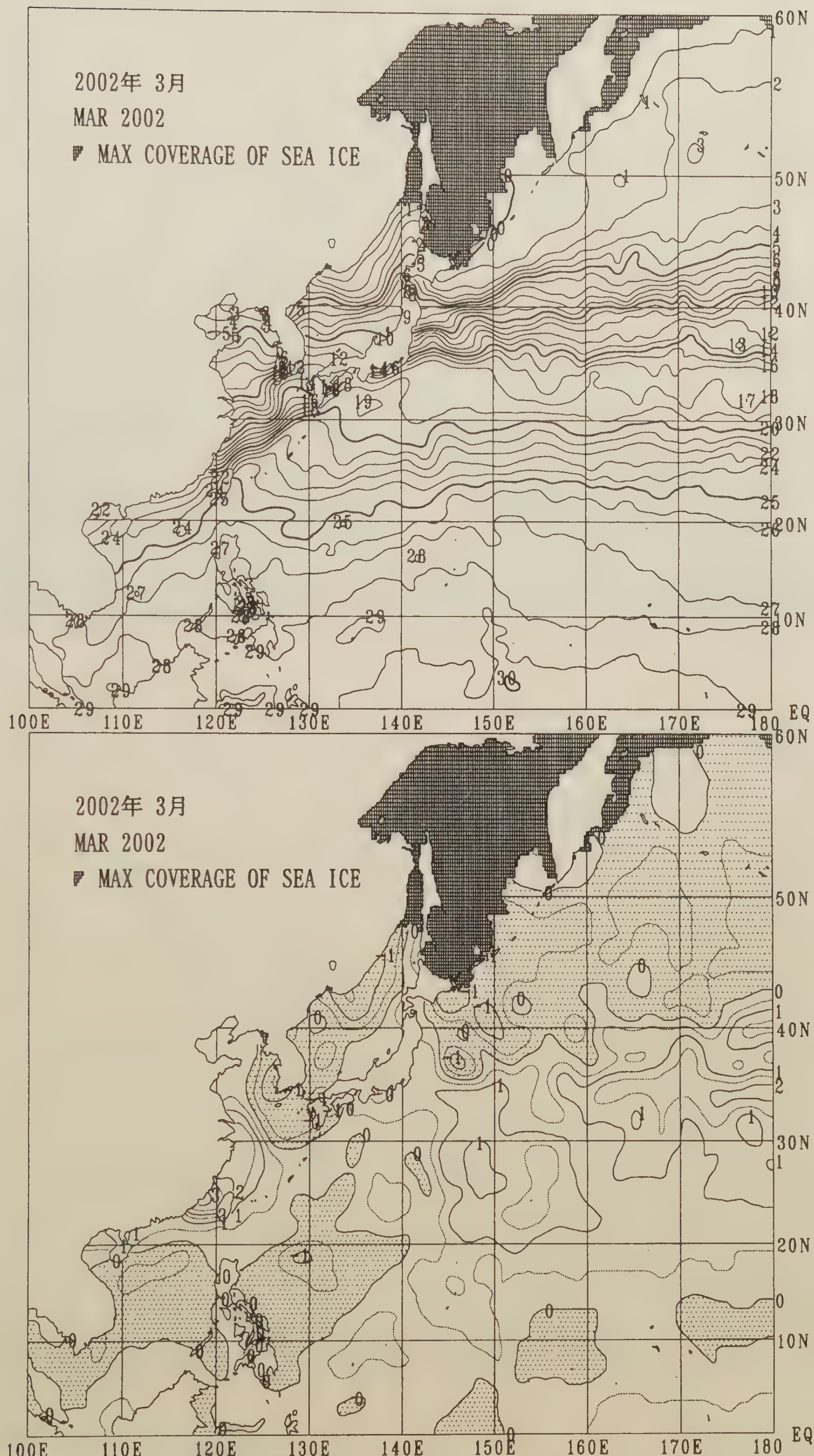
旬平均沿岸水温(℃) Coastal Water Temperature		
地 点 名 (Index Number)	水温 Temp.	偏差 Anom.
石　垣(47918)	23.3	0.4
御前崎(47655)	13.1	0.1
八丈島(47678)	18.7	1.1
小名浜(47598)	9.2	0.1
宮　古(47585)	7.1	0.9
江　差(47428)	8.8	2.1
浜　田(47755)	14.0	1.1



第3図 北西太平洋旬平均海面水温図(上)及び偏差図(下) (2002年 3月下旬)

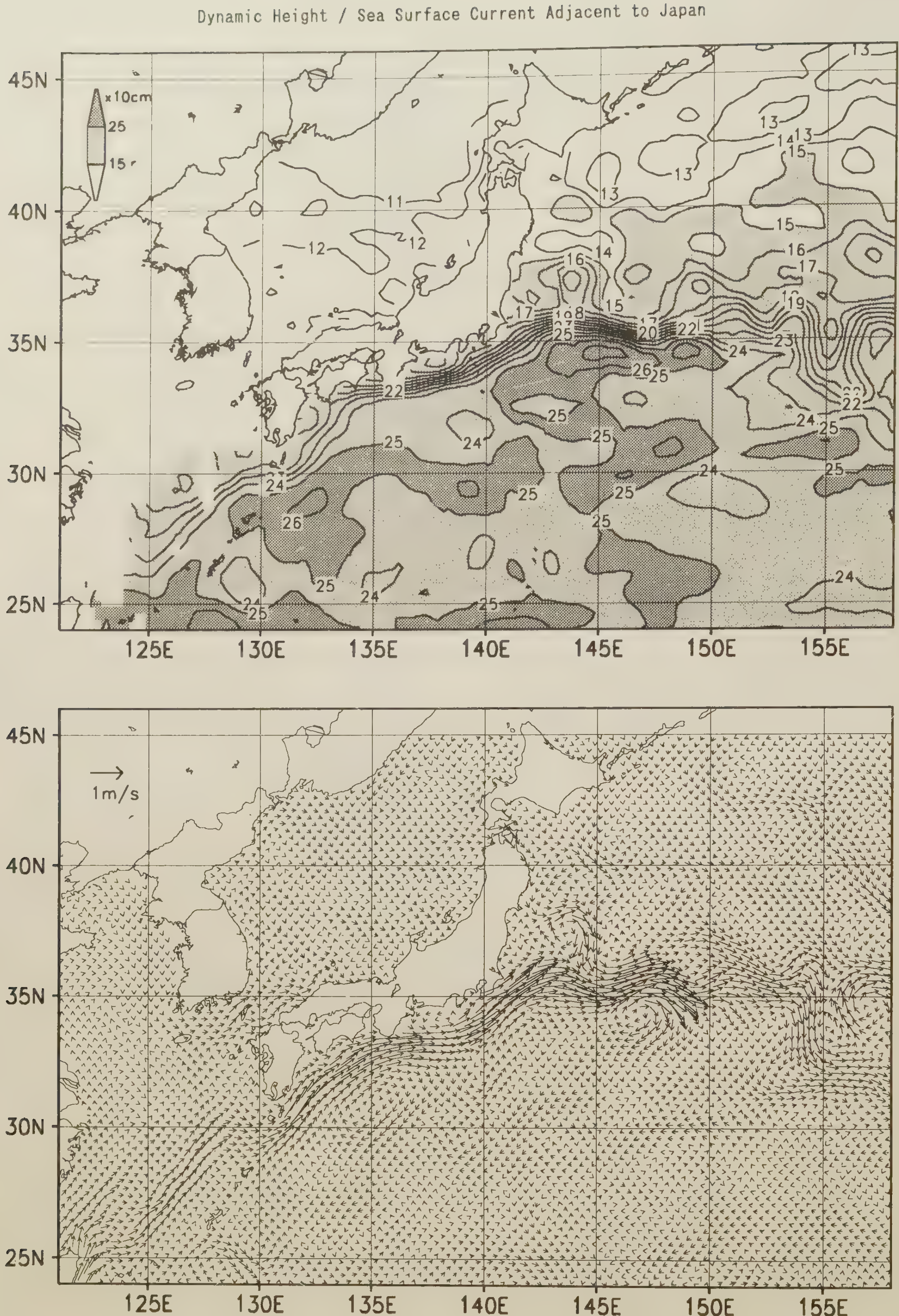
Fig. 3 Ten-day mean SST (top) and anomalies (bottom) in the western North Pacific for the 3rd ten-day period in MAR 2002. Anomalies are computed from the JMA climatology (1971-2000). Contour interval is 1°C and additional anomaly contours of 0.5°C are shown by broken lines. Negative anomalies are spotted.

Monthly Mean SST & Anomalies



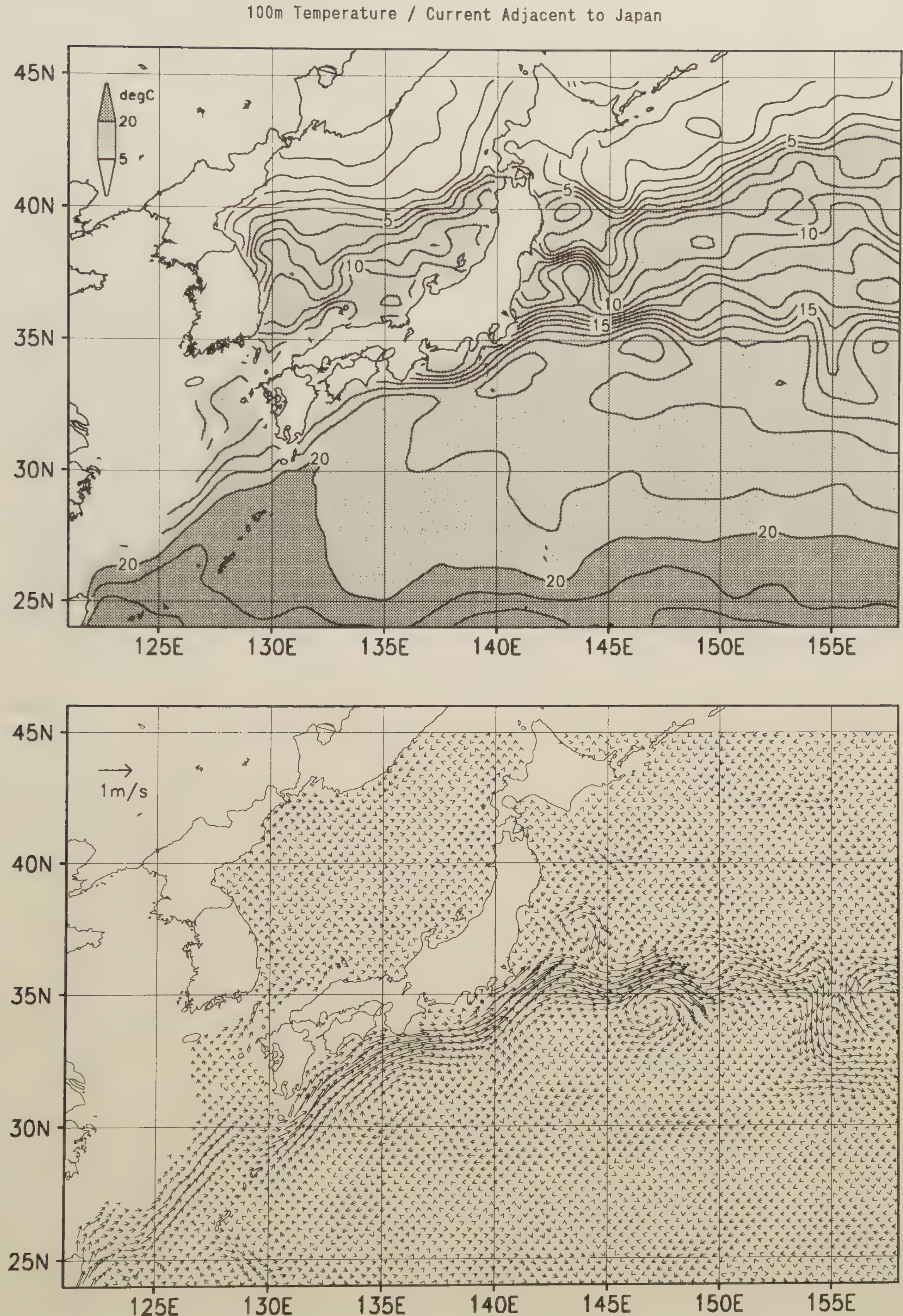
第4図 北西太平洋月平均海面水温図(上)及び偏差図(下) (2002年 3月)

Fig. 4 Monthly mean SST (top) and anomalies (bottom) in the western North Pacific for MAR 2002. Anomalies are computed from the JMA climatology (1971-2000). Contour interval is 1°C and additional anomaly contours of 0.5°C are shown by broken lines. Negative anomalies are spotted.



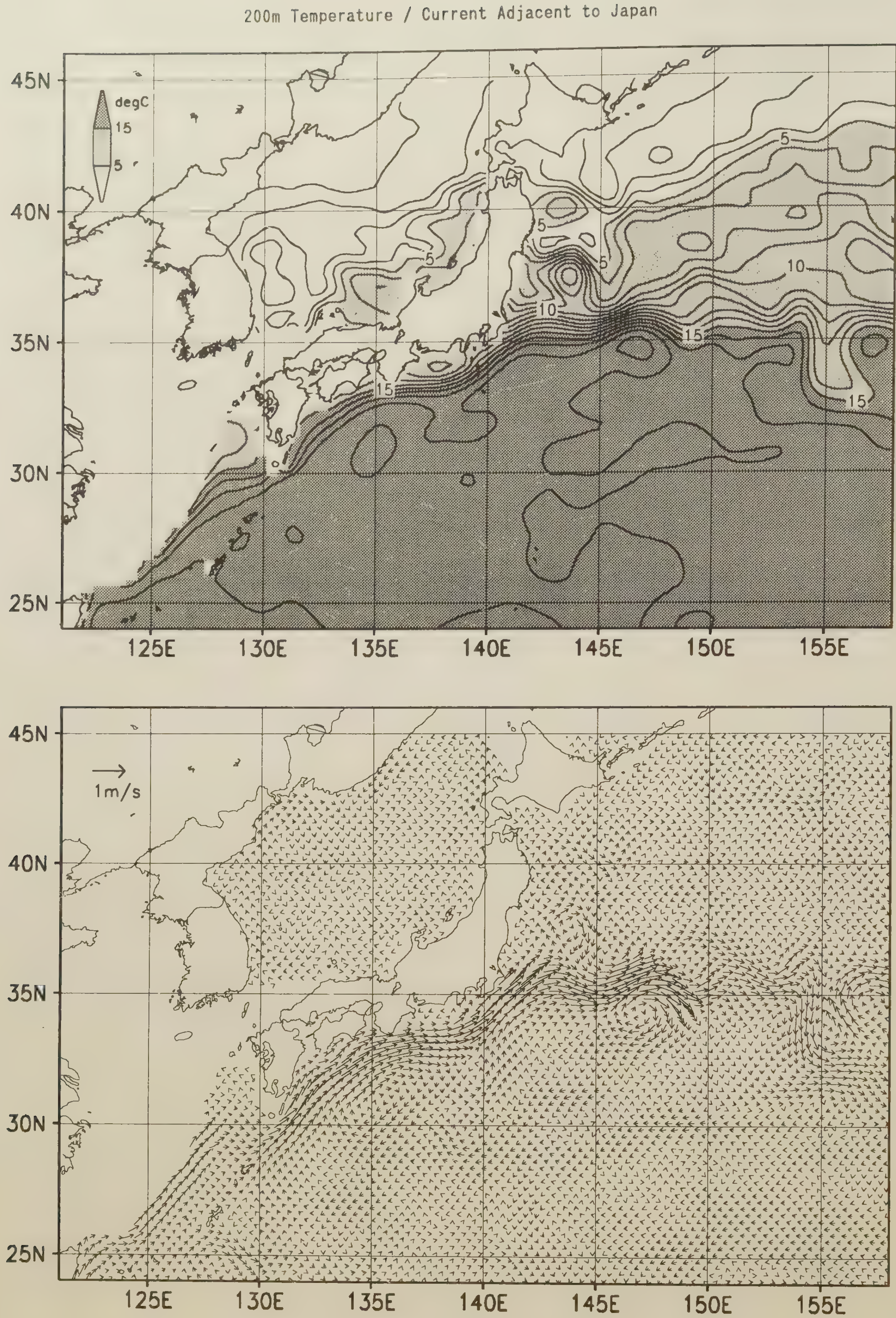
第 5 図　日本近海月平均海面高度分布図 (上) と海面海流図 (下)　(2002 年 3 月)
（海洋総合解析システムによる）

Fig. 5　Monthly mean sea surface height (top) and current (bottom) in seas adjacent to Japan for March 2002. Contour interval is 10cm (top). (calculated by the Ocean Comprehensive Analysis System)



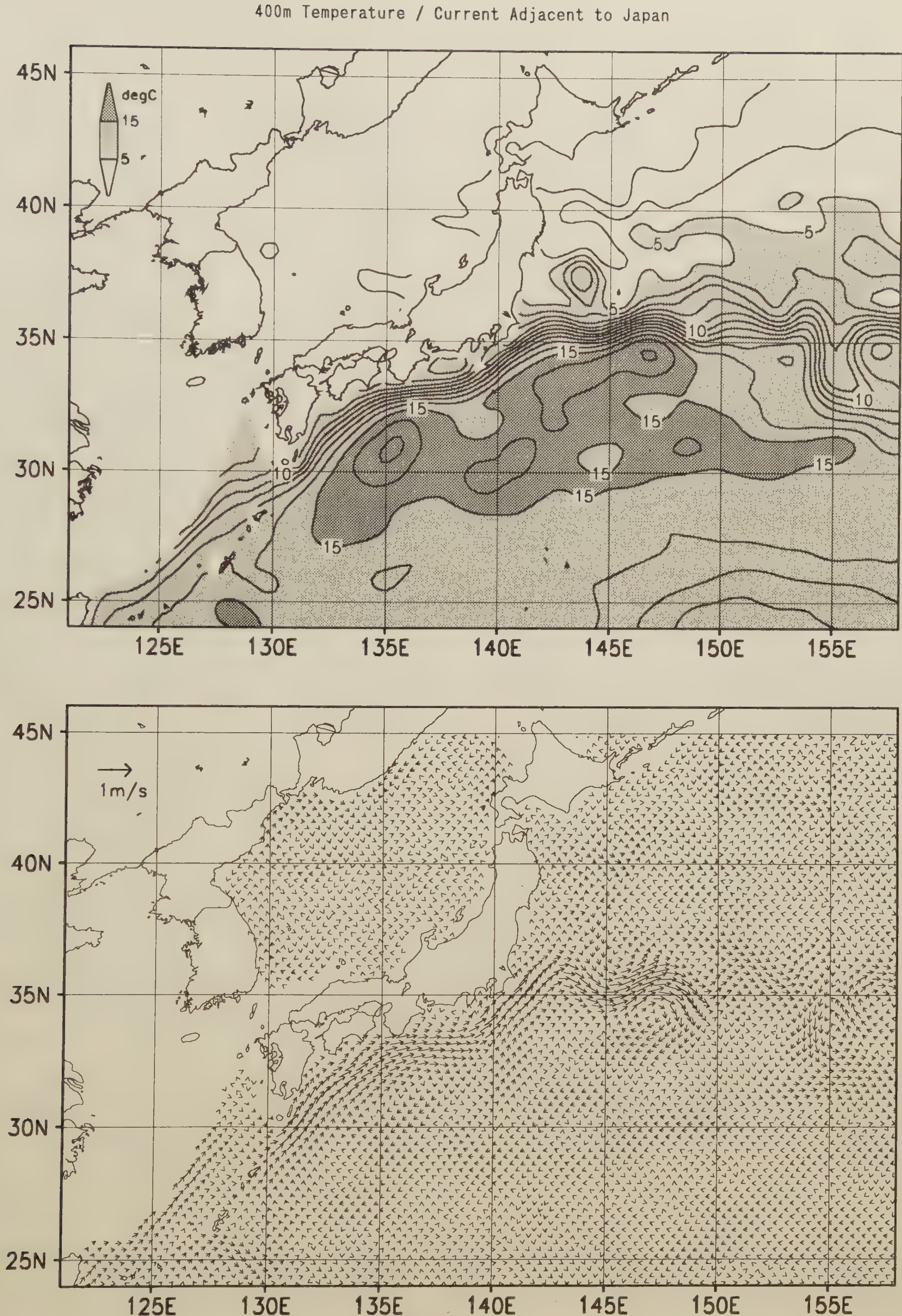
第 6 図　日本近海月平均表層水温図（上）と表層海流図（下）（深さ 100 m）（2002 年 3 月）
（海洋総合解析システムによる）

Fig. 6　Monthly mean subsurface (100 m) temperature (top) and current (bottom) in seas adjacent to Japan for March 2002. Contour interval is 1 ℃ (top). (calculated by the Ocean Comprehensive Analysis System)



第７図　日本近海月平均表層水温図（上）と表層海流図（下）（深さ 200 m）（2002 年 3 月）
（海洋総合解析システムによる）

Fig. 7　Monthly mean subsurface (200 m) temperature (top) and current (bottom) in seas adjacent to Japan for March 2002. Contour interval is 1 ℃ (top). (calculated by the Ocean Comprehensive Analysis System)



第 8 図　日本近海月平均表層水温図（上）と表層海流図（下）（深さ 400 m）（2002 年 3 月）
（海洋総合解析システムによる）

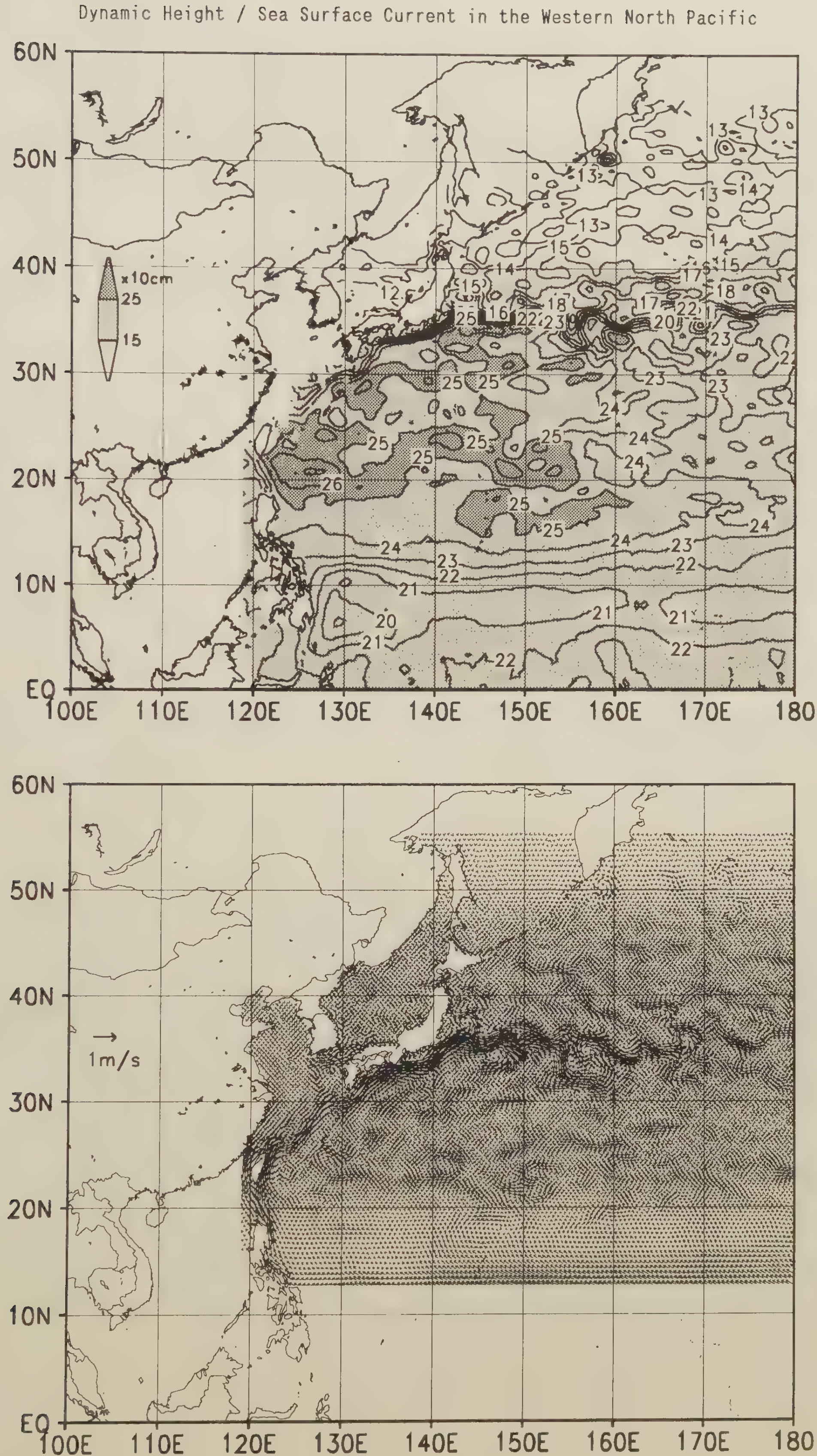
Fig. 8　Monthly mean subsurface (400 m) temperature (top) and current (bottom) in seas adjacent to Japan for March 2002. Contour interval is 1 ℃ (top). (calculated by the Ocean Comprehensive Analysis System)

Location of the Kuroshio axis



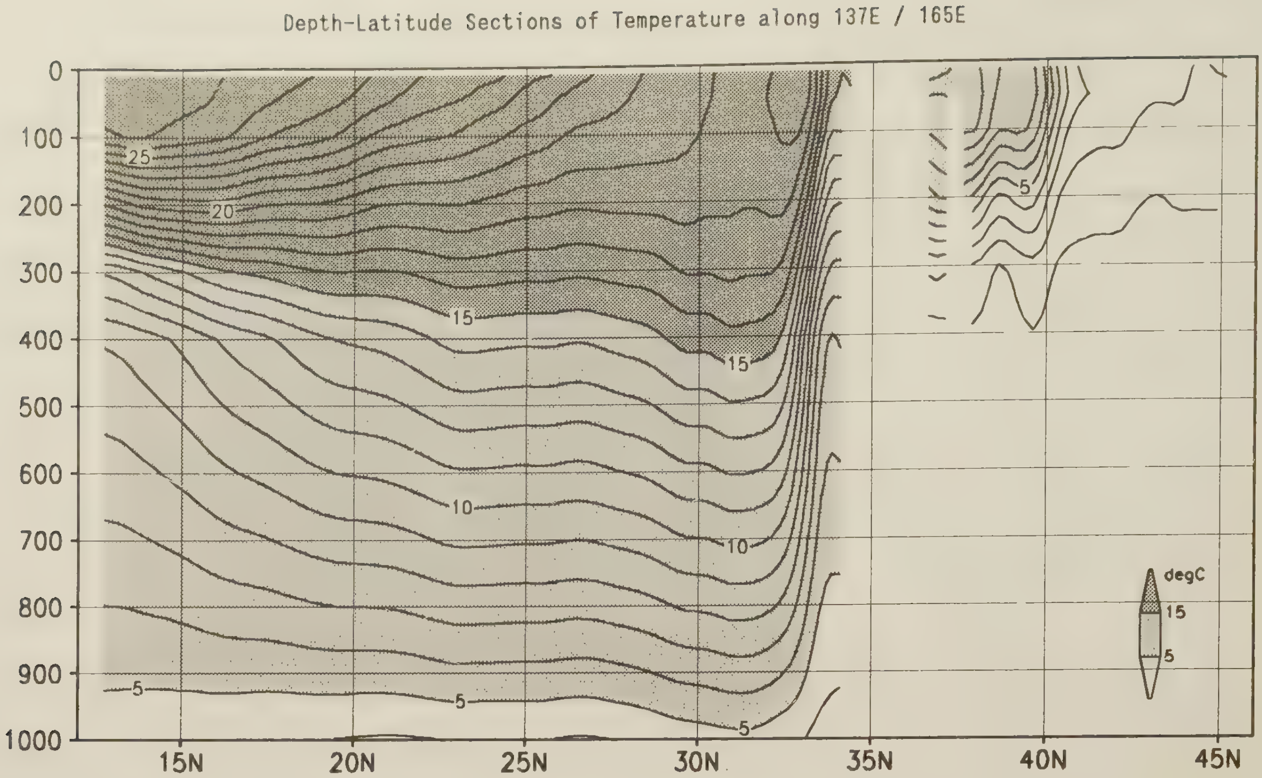
第9図 旬別黒潮流軸図

Fig. 9 Location of the Kuroshio axis



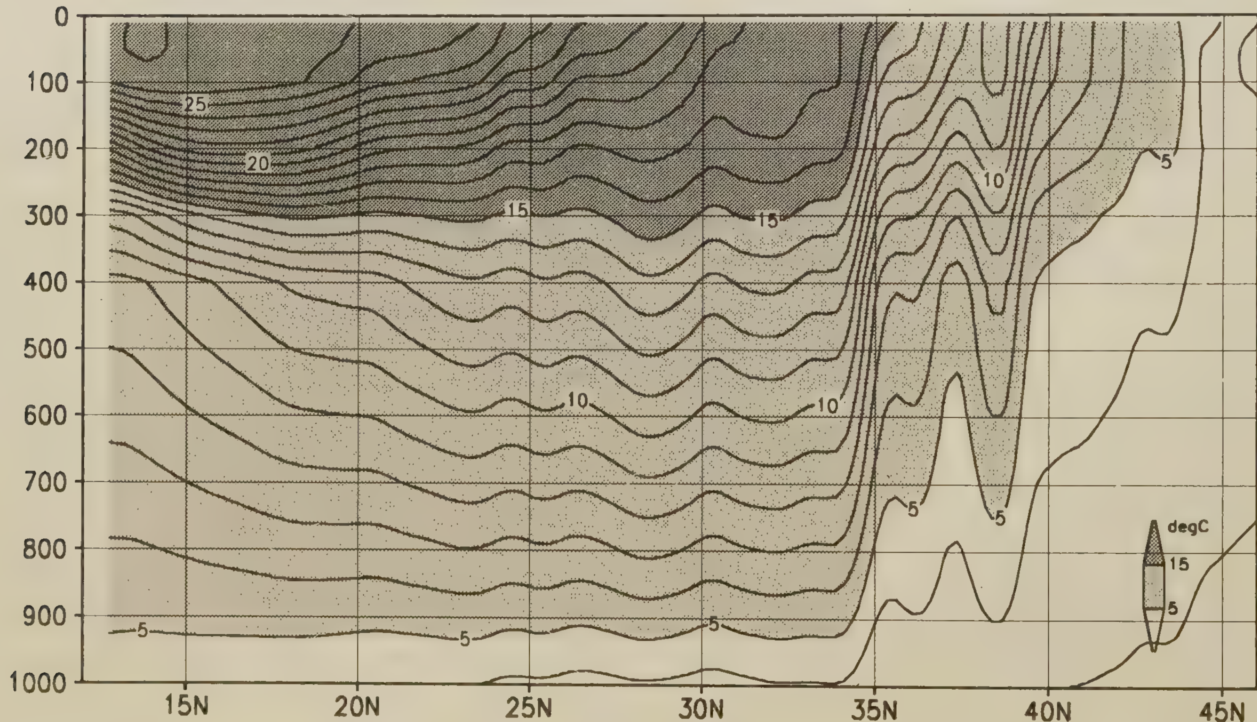
第 10 図　北西太平洋月平均海面高度分布図 (上) と海面海流図 (下)　(2002 年 3 月)
（海洋総合解析システムによる）

Fig. 10　Monthly mean sea surface height (top) and current (bottom) in the western North Pacific for March 2002. Contour interval is 10cm (top). (calculated by the Ocean Comprehensive Analysis System)



第 11 図　東経 137° 線に沿う月平均表層水温の鉛直断面図（2002 年 3 月）
（海洋総合解析システムによる）

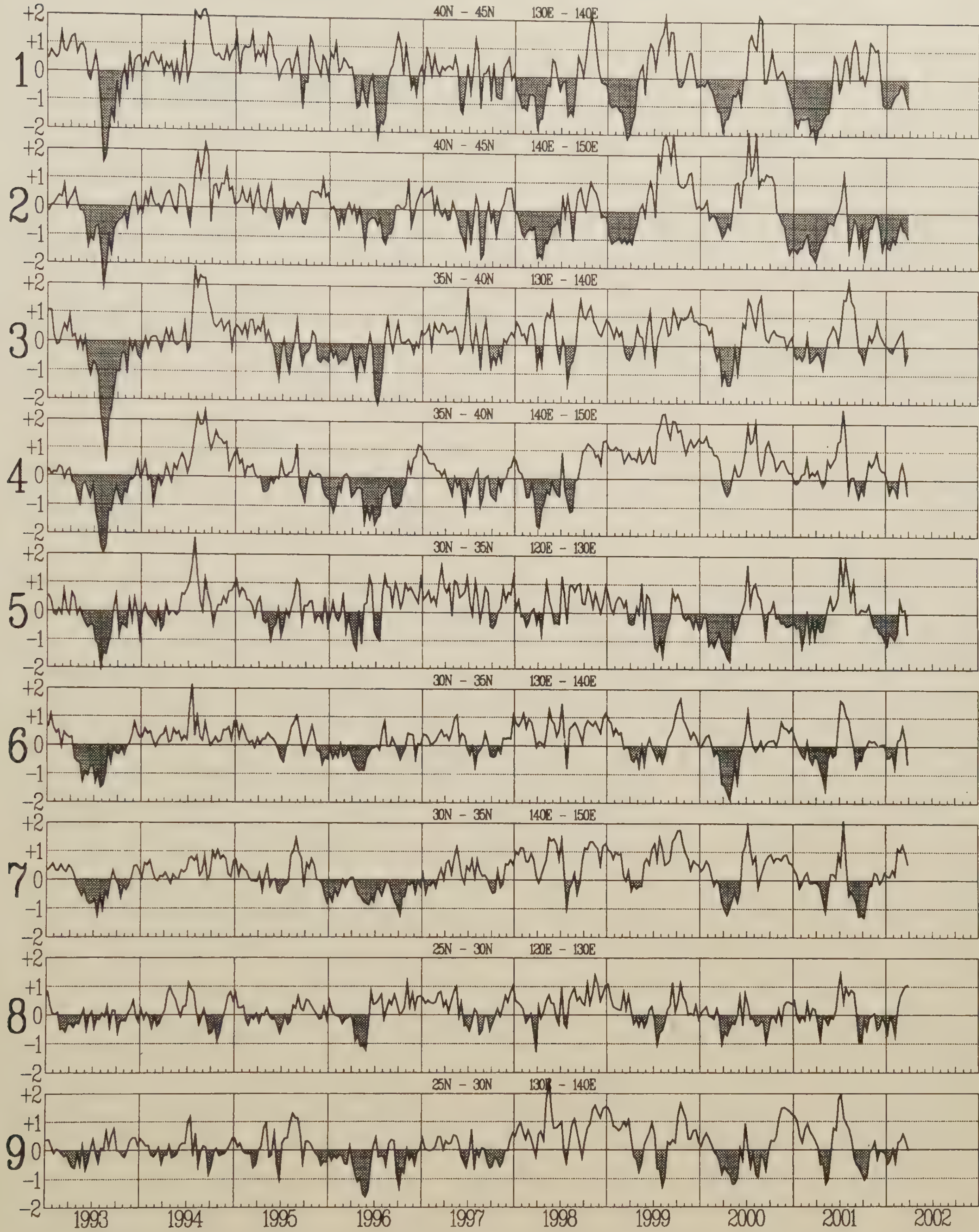
Fig. 11　Vertical cross section of monthly mean temperature along 137 °E for March 2002. Contour interval is 1 ℃. (calculated by the Ocean Comprehensive Analysis System)



第 12 図　東経 165° 線に沿う月平均表層水温の鉛直断面図（2002 年 3 月）
（海洋総合解析システムによる）

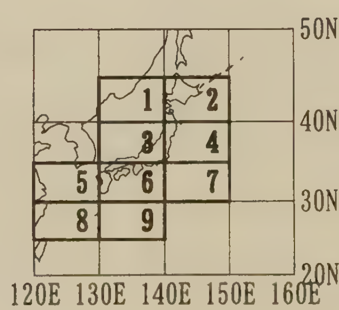
Fig. 12　Vertical cross section of monthly mean temperature along 165 °E for March 2002. Contour interval is 1 ℃. (calculated by the Ocean Comprehensive Analysis System)

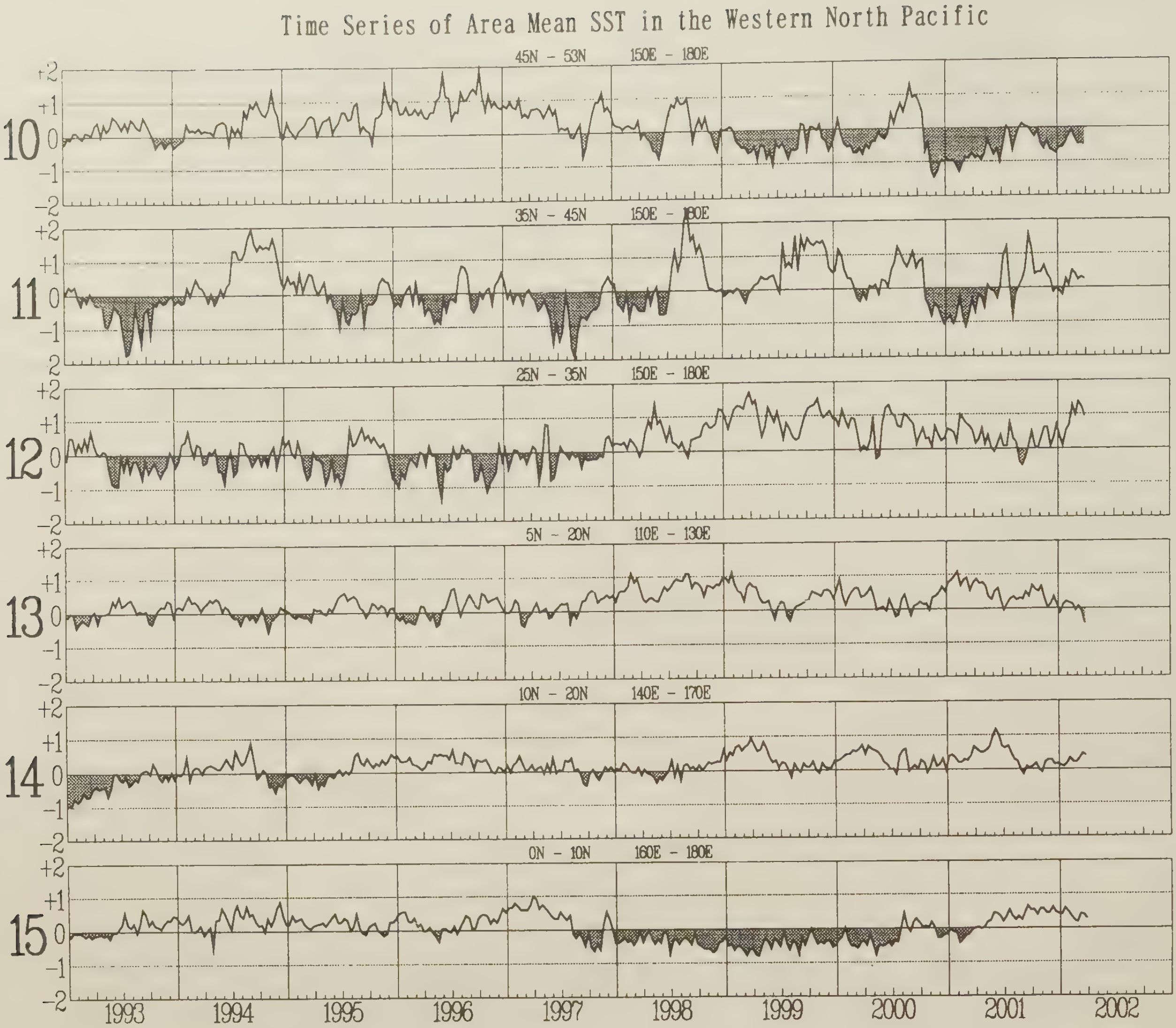
Time Series of Area Mean SST in the Western North Pacific



第13図　海域別旬平均海面水温平年偏差時系列図

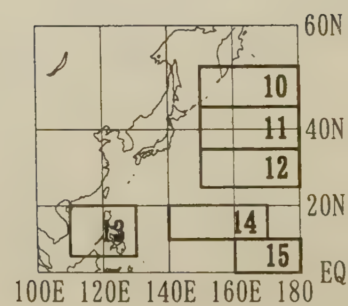
Fig. 13 Time series of the ten-day mean SST anomalies (°C) in the western North Pacific for the areas shown in the right panel. Negative anomalies are shaded. Anomalies are computed from the JMA climatology (1971-2000).

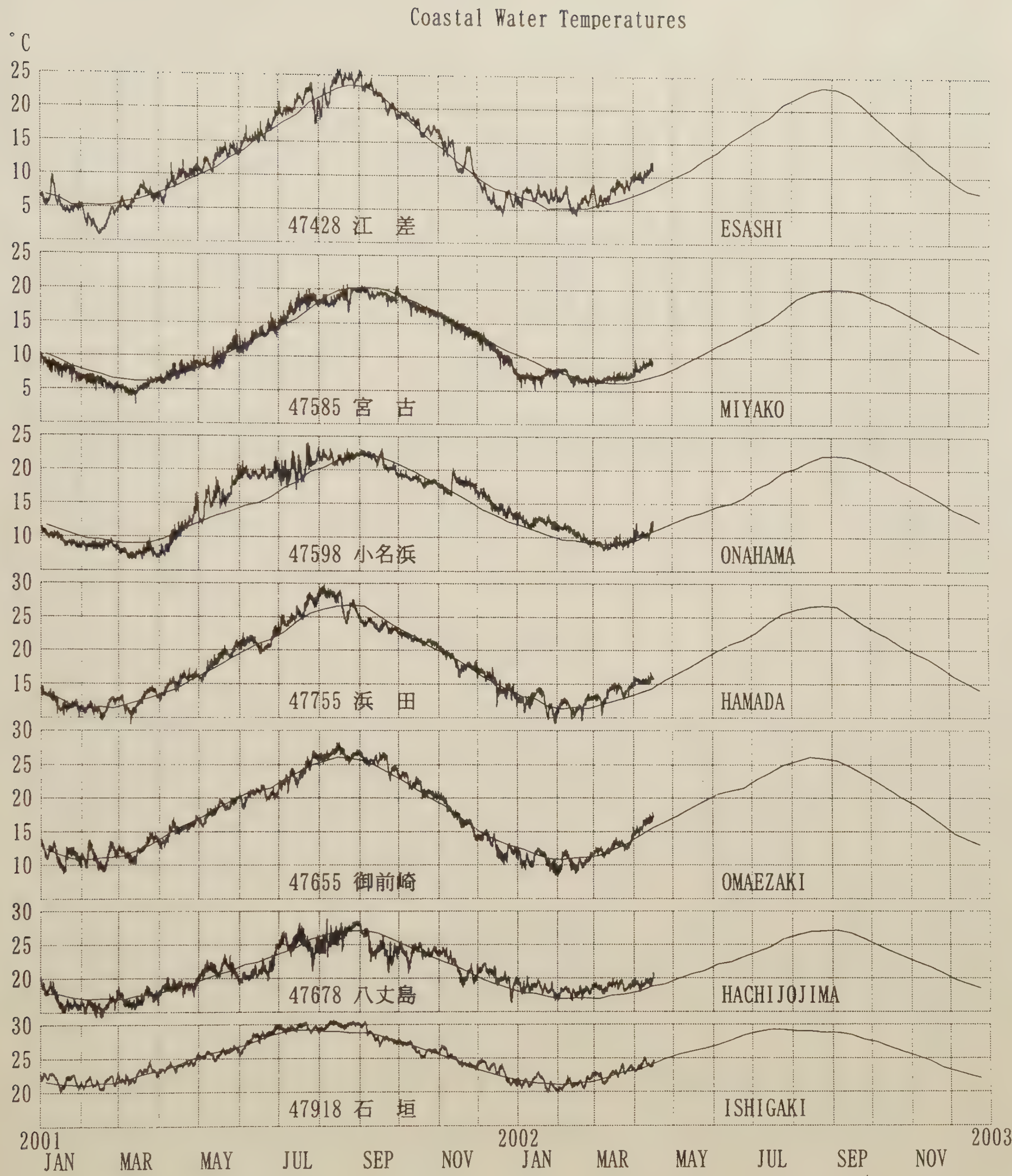




第13図　海域別旬平均海面水温平年偏差時系列図（つづき）

Fig. 13 (continue) Time series of the ten-day mean SST anomalies (°C) in the western North Pacific for the areas shown in the right panel. Negative anomalies are shaded. Anomalies are computed from the JMA climatology (1971-2000).

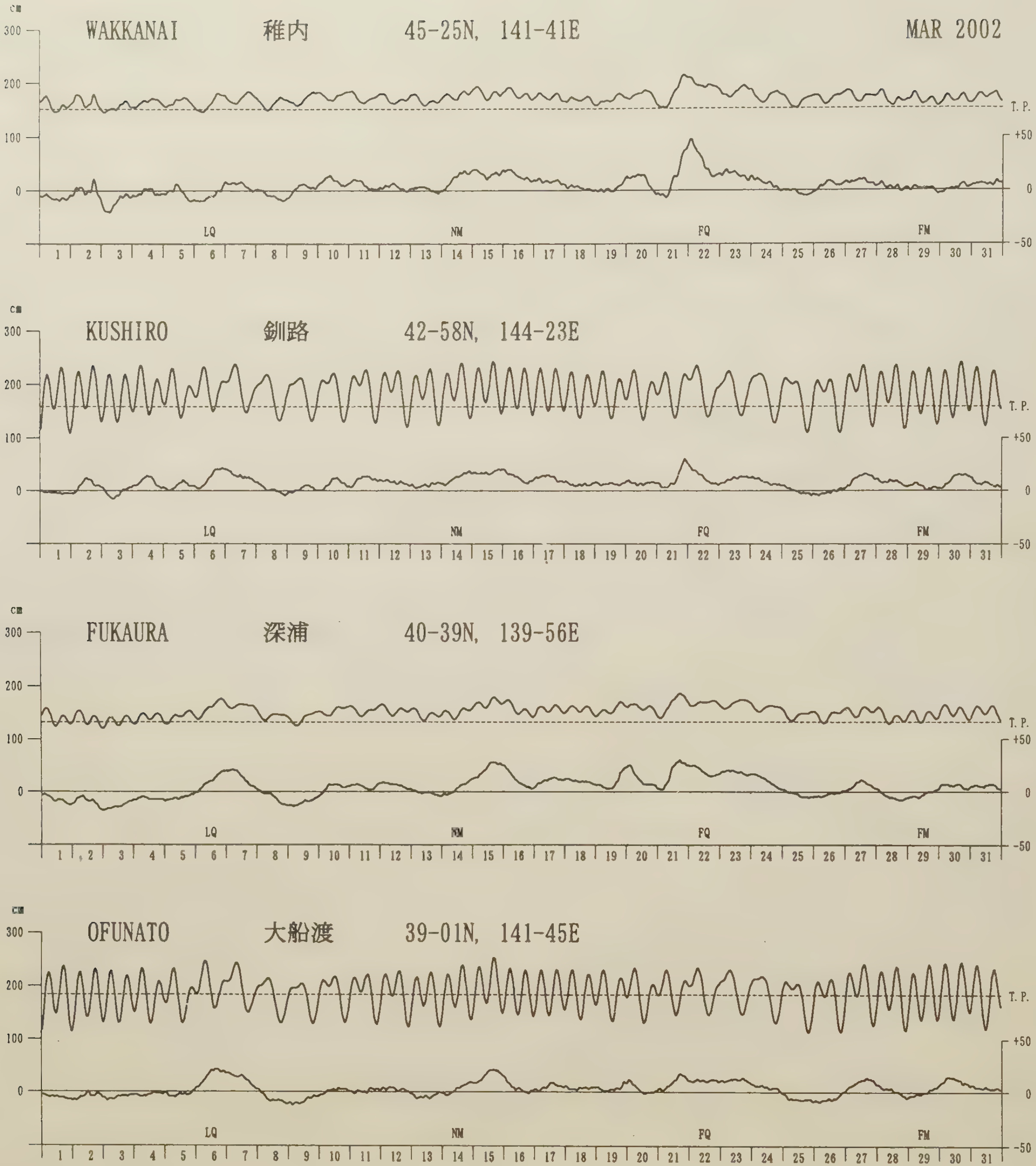






第14図 沿岸水温時系列図

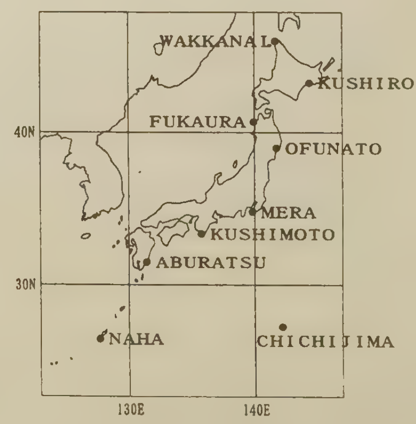
Fig. 14 Time series of hourly coastal water temperatures (°C) measured at 7 coastal stations of the JMA shown in the right panel.
Thin lines show ten-day mean climatology.



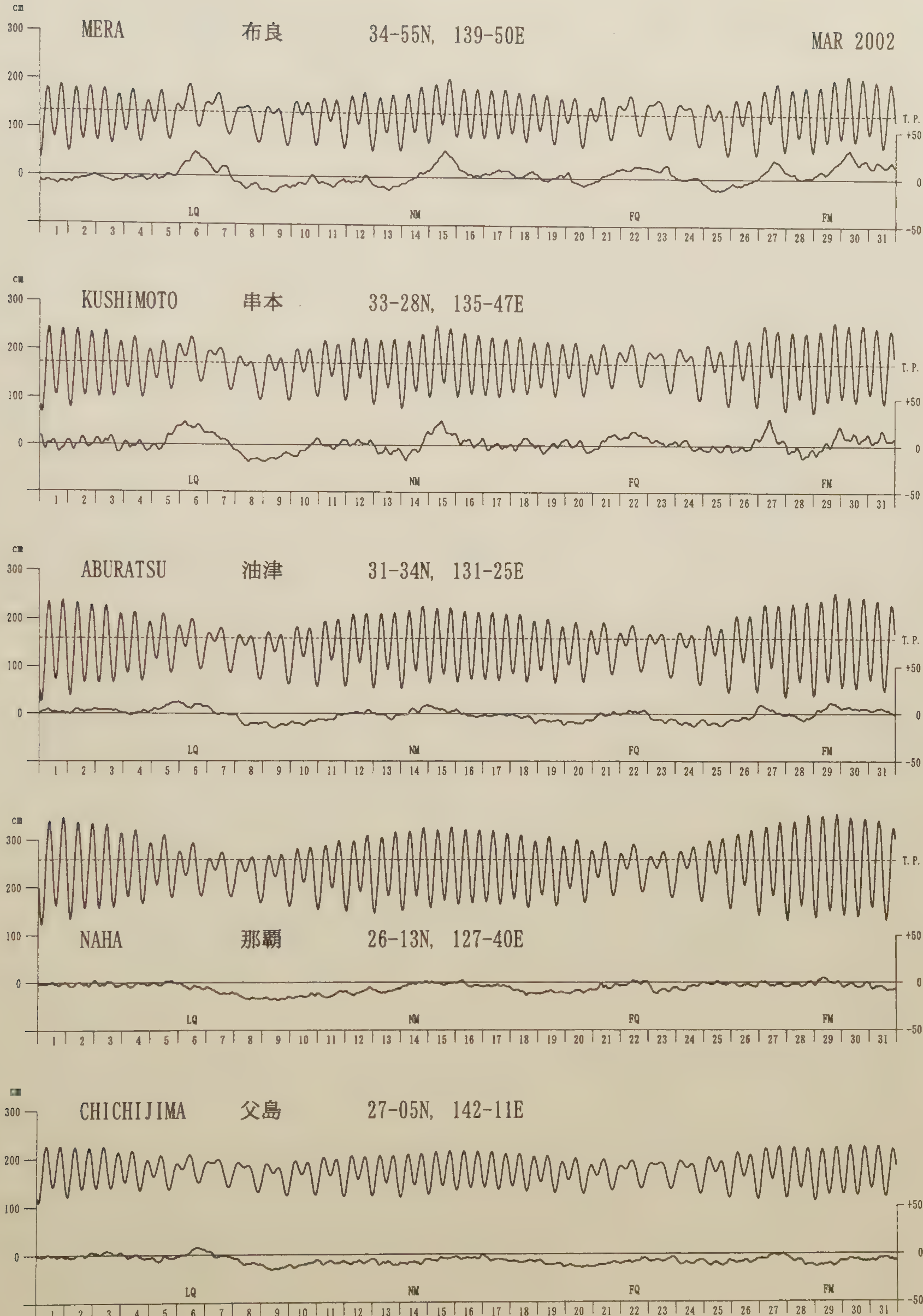
第15図 沿岸潮位時系列図（2002年 3月）

Fig. 15 Time series of hourly sea level observation (upper line) and its anomalies (lower line) at 9 stations of the JMA in the right panel.
Short term variations are removed from raw data.

NM: new moon, FQ: first quarter
FM: full moon, LQ: last quarter
T. P. : Mean sea level of Tokyo Bay (Tokyo Peil)

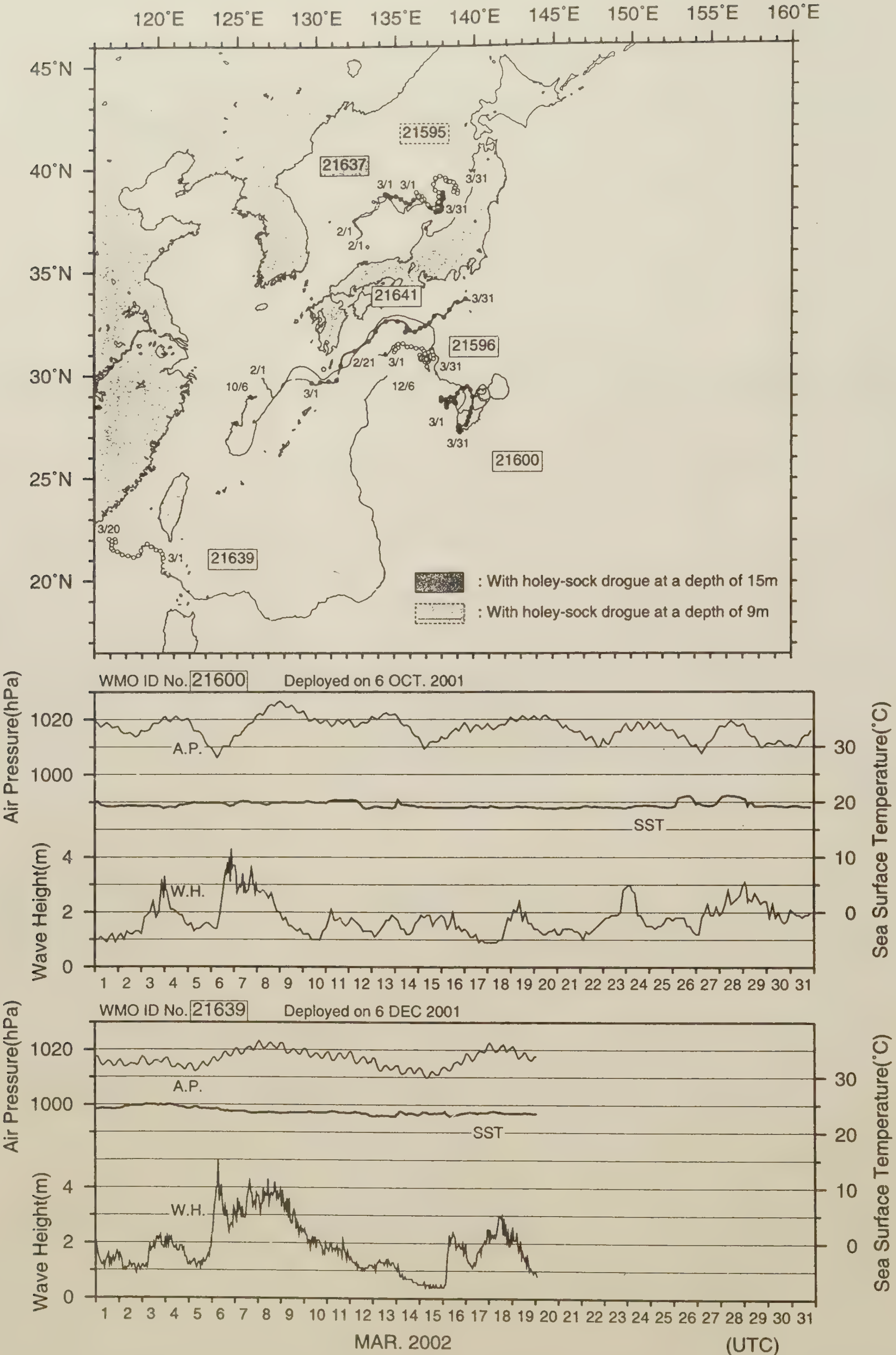


Time series of Sea Level



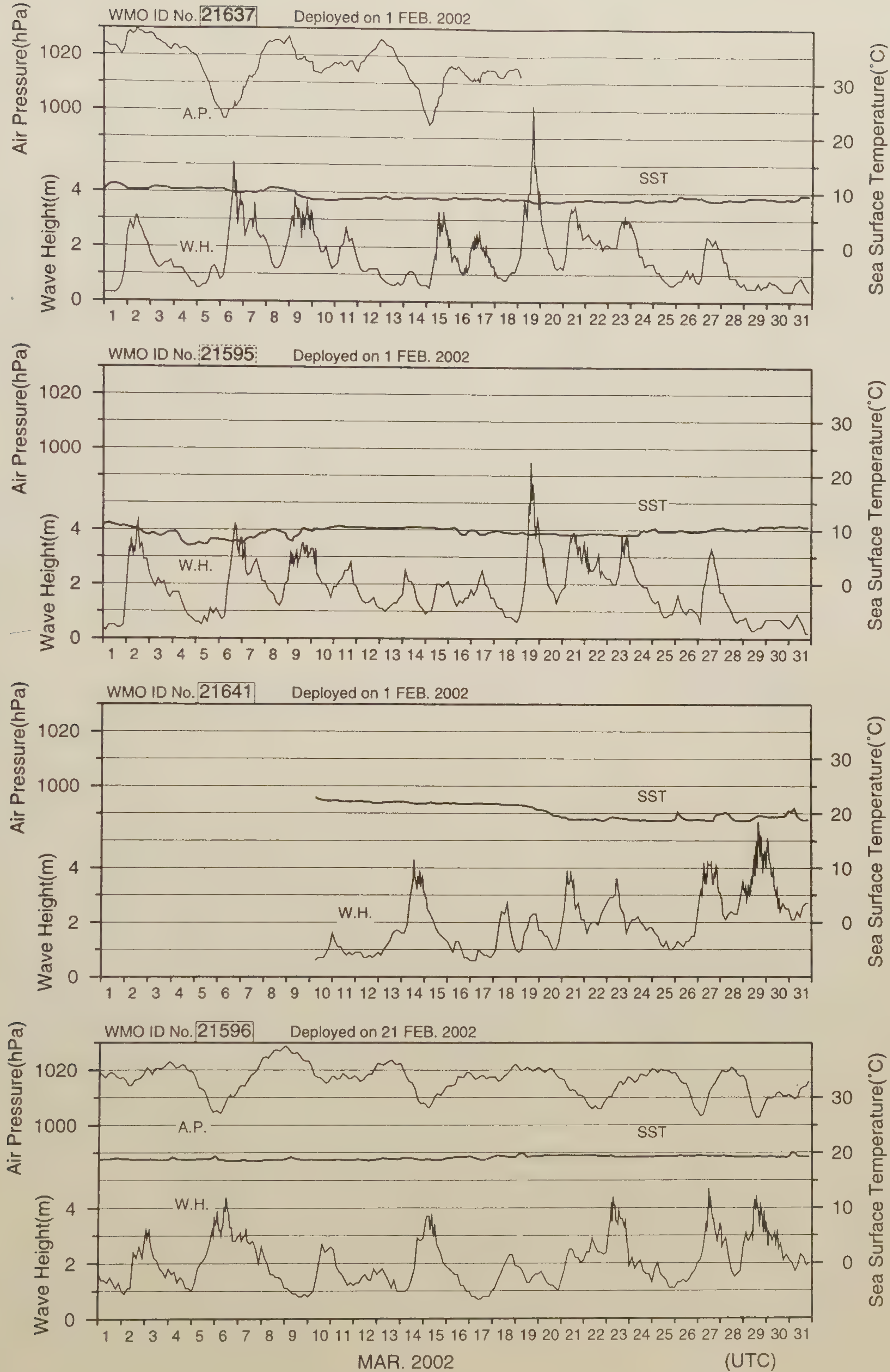
第15図 つづき

Fig. 15 continue



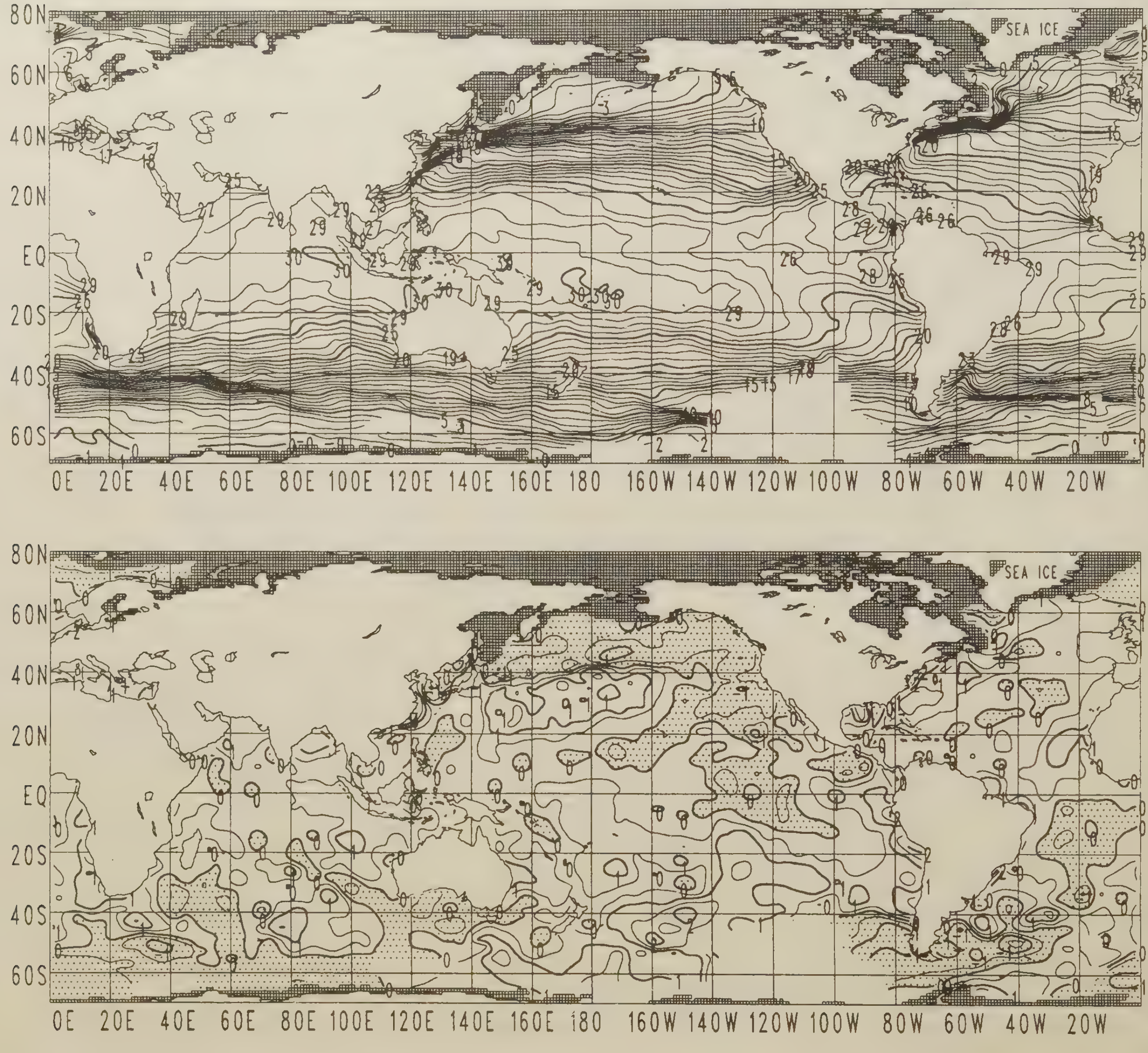
第16図　漂流型海洋気象ブイロボットの軌跡と観測要素の時系列図

Fig.16　Time series of JMA drifting buoy observation.
The upper panel shows paths of the buoys. Circles denote the position at 00h UTC everyday.
The lower panel shows time series of observation data.



第16図 つづき
Fig.16 continue

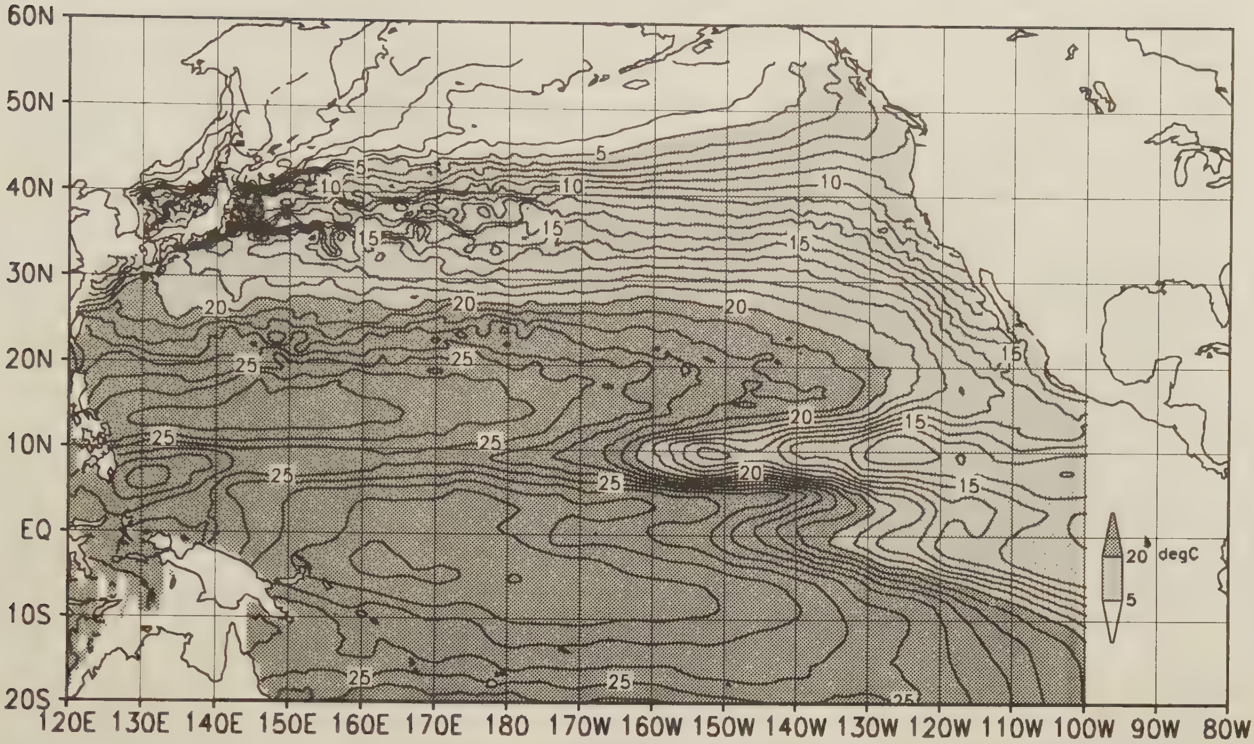
SST & Anomalies in the Global Ocean



第17図　全球月平均海面水温図（上）及び偏差図（下）（2002年 3月）

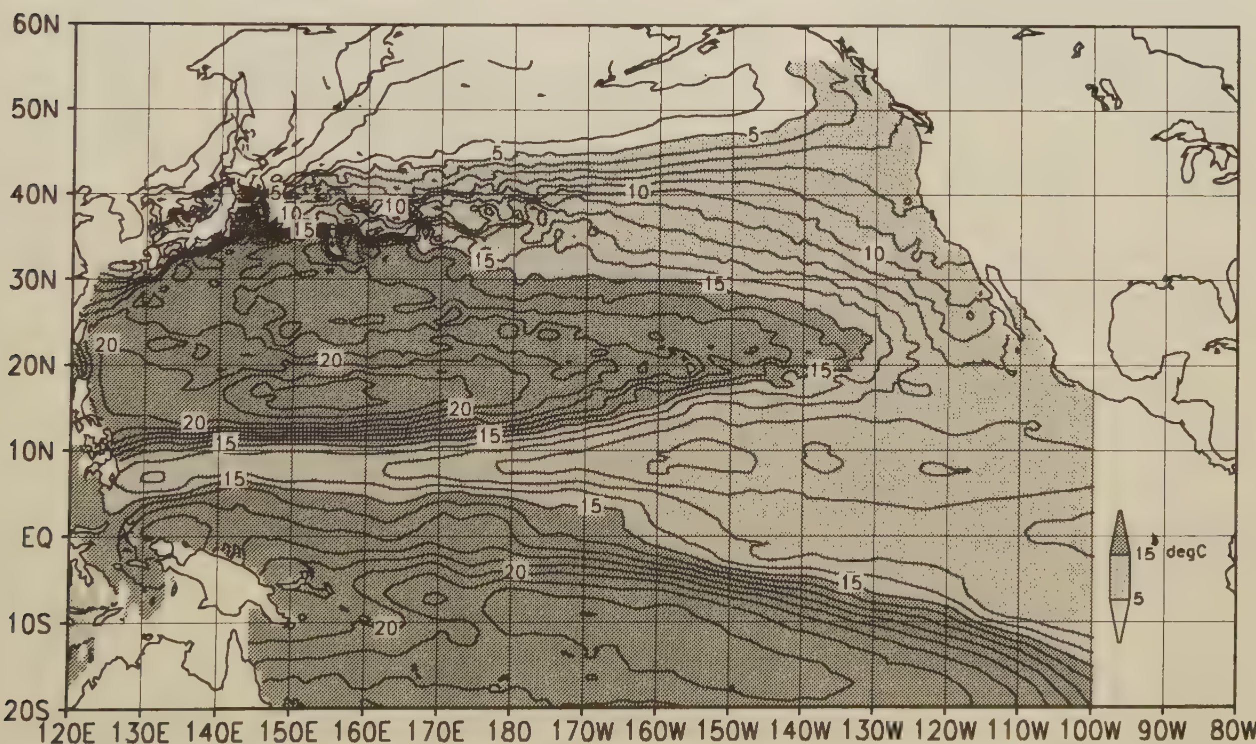
Fig. 17　Monthly mean SST over the global ocean (top) and anomalies (bottom) for MAR 2002.　Anomalies are computed from the JMA climatology (1971-2000). Contour interval is 1°C (top) and additional anomaly contours of ±0.5°C are shown by thin lines.　Negative anomalies are spotted.　Maximum coverage of sea ice is shaded.　Data sources for sea ice are U.S. National Ice Center (polar regions) and JMA (the Sea of Okhotsk).

100m / 200m Temperature in the Pacific Ocean



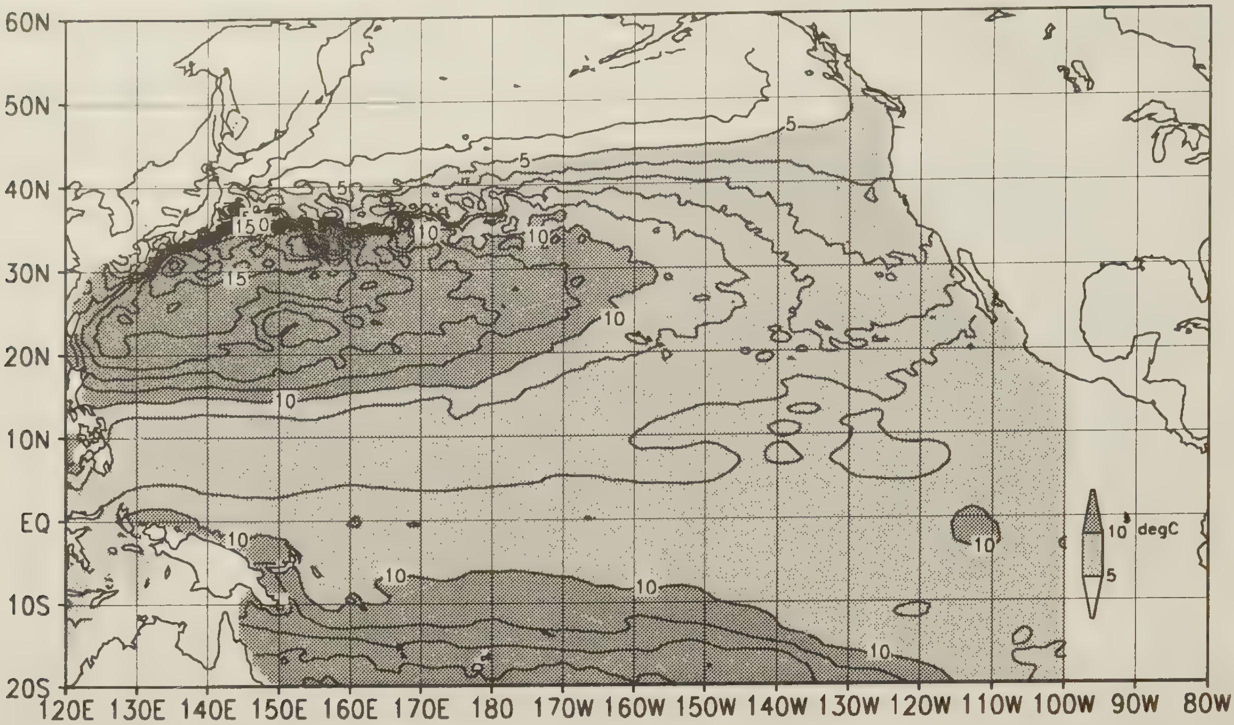
第 18 図　太平洋月平均表層水温図（深さ 100 m）　(2002 年 3 月)
（海洋総合解析システムによる）

Fig. 18　Monthly mean subsurface (100 m) temperature in the Pacific Ocean for March 2002. Contour interval is 1 ℃. (calculated by the Ocean Comprehensive Analysis System)



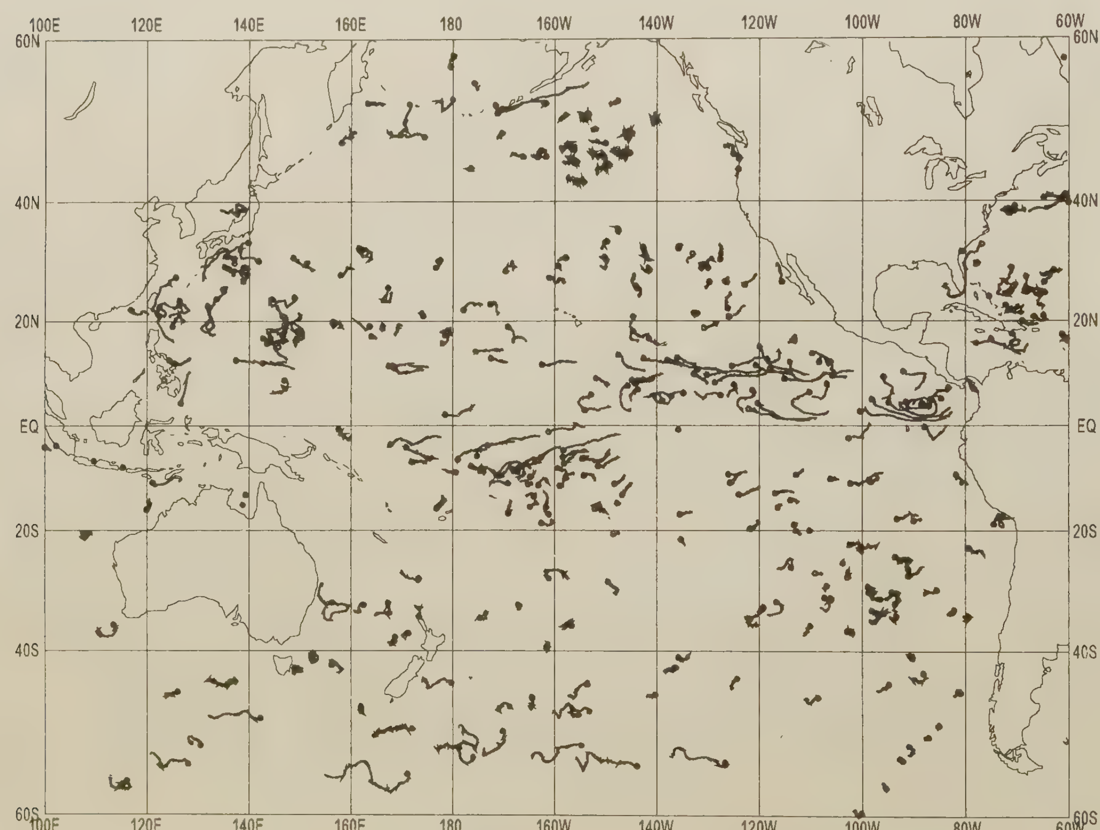
第 19 図　太平洋月平均表層水温図（深さ 200 m）　(2002 年 3 月)
（海洋総合解析システムによる）

Fig. 19　Monthly mean subsurface (200 m) temperature in the Pacific Ocean for March 2002. Contour interval is 1 ℃. (calculated by the Ocean Comprehensive Analysis System)



第 20 図　太平洋月平均表層水温図（深さ 400 m）（2002 年 3 月）
（海洋総合解析システムによる）

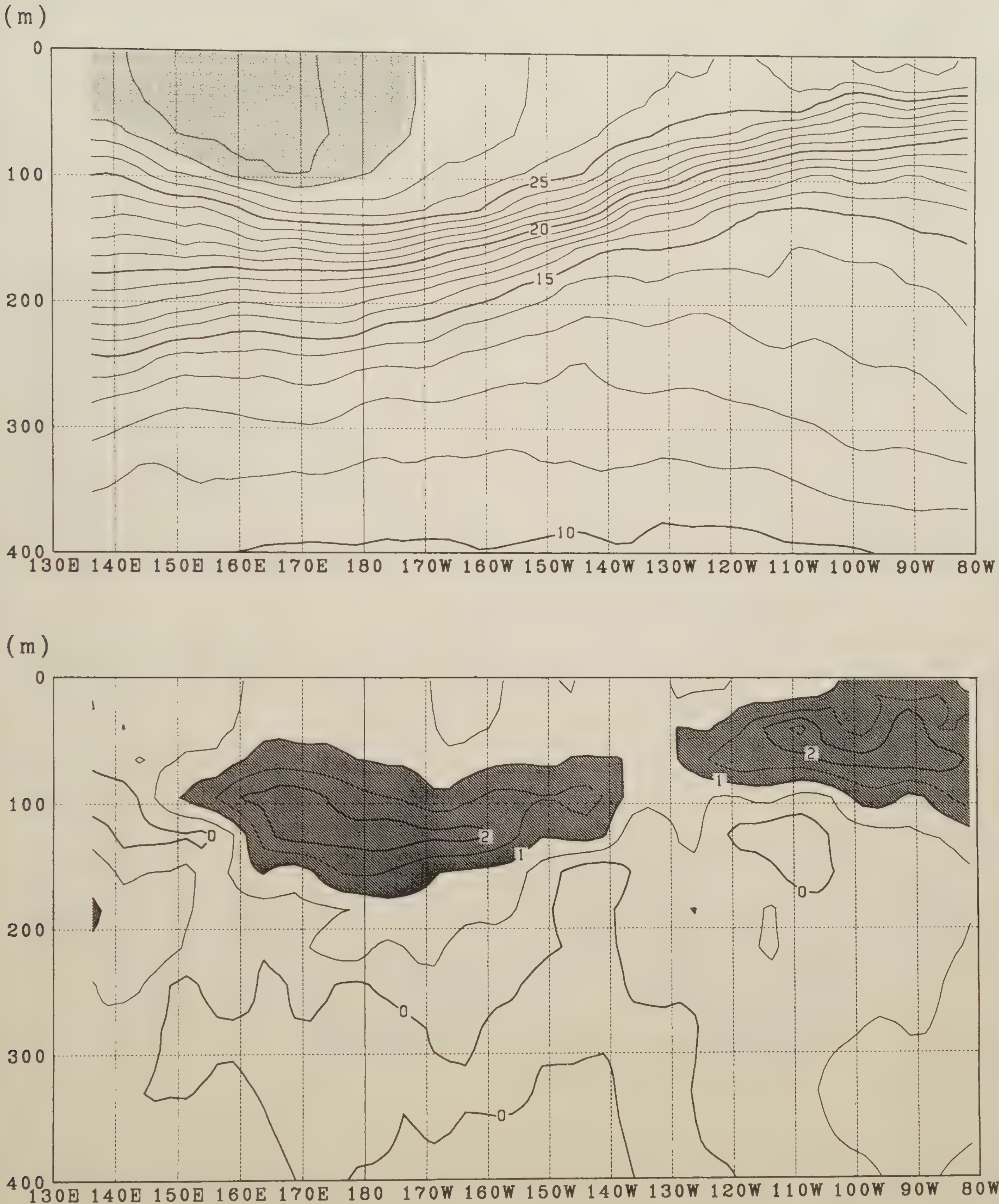
Fig. 20　Monthly mean subsurface (400 m) temperature in the Pacific Ocean for March 2002. Contour interval is 1 ℃. (calculated by the Ocean Comprehensive Analysis System)



第 21 図　太平洋ブイ流跡図（2002 年 3 月）

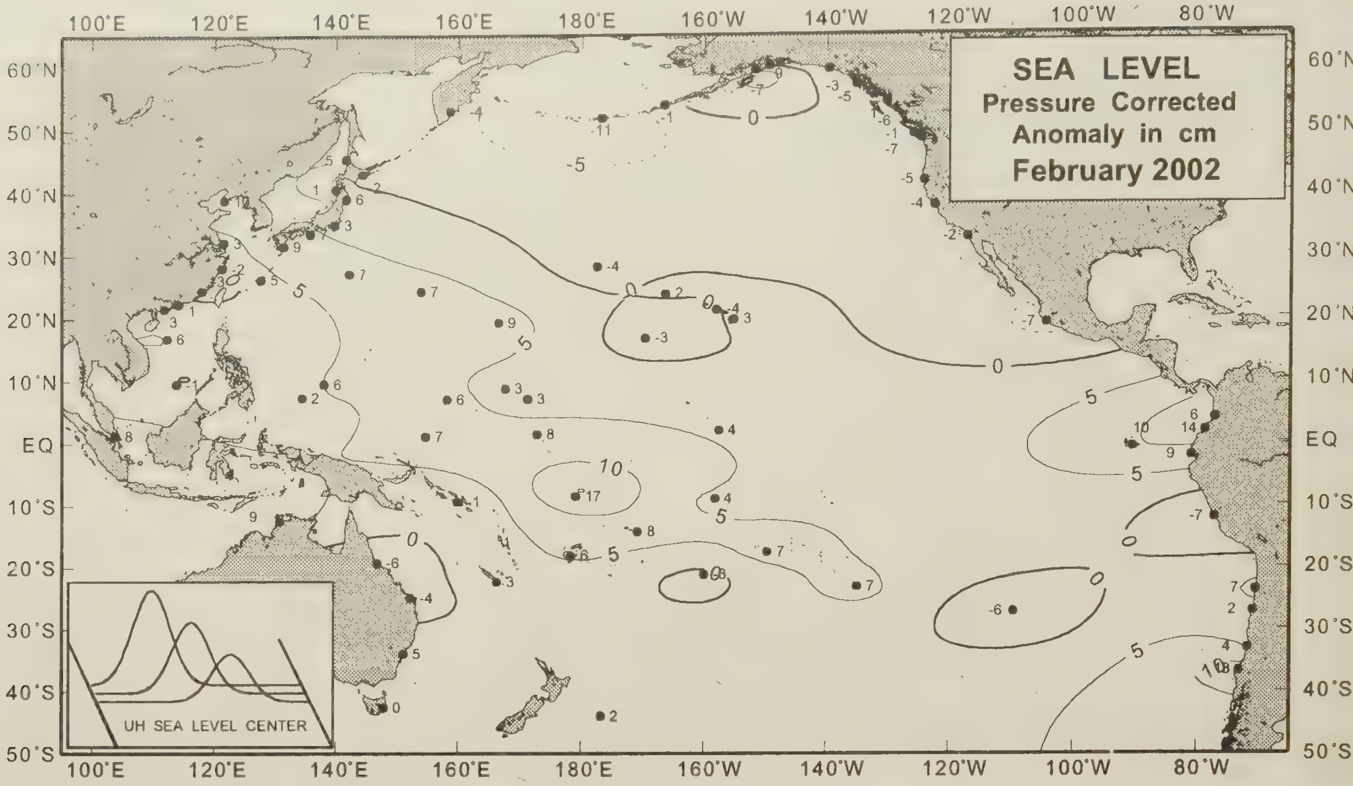
Fig. 21　Trajectories of drifting buoys in the Pacific Ocean during March 2002. Each track is for one buoy. Small circles represent the last positions for the month.

Depth-Longitude Sections of Equatorial Temperature & Anomalies



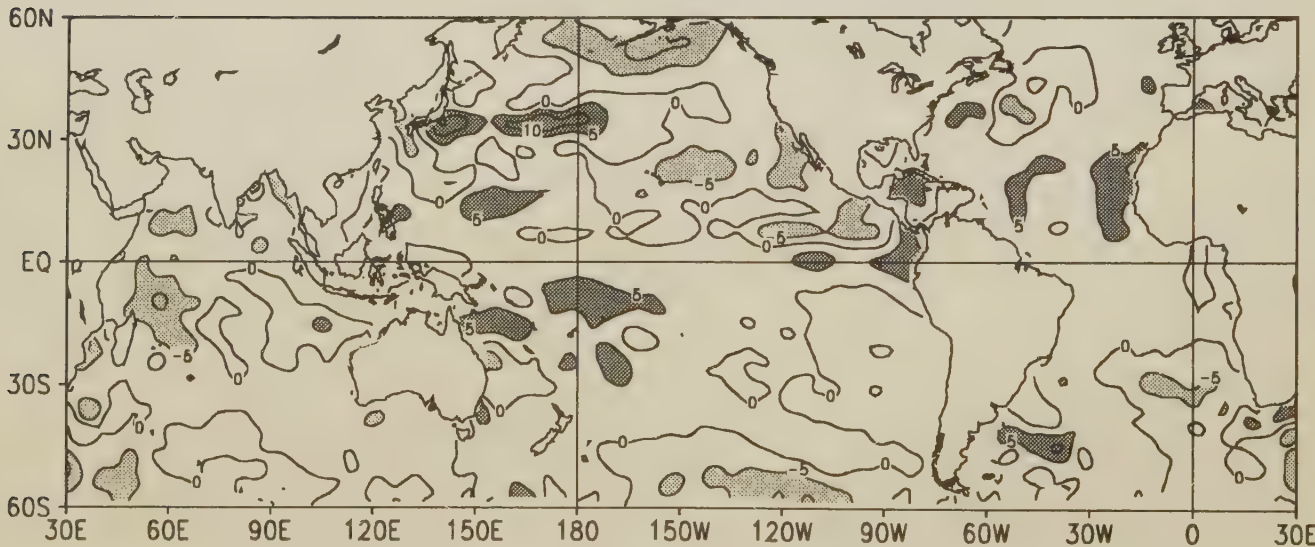
第22図　太平洋赤道に沿う表層水温（上）及び偏差（下）の深度－経度断面図（2002年 3月）

Fig. 22 Depth-longitude sections of temperature (top) and anomalies (bottom) along the equator in the Pacific Ocean for MAR 2002. Data are derived from the Ocean Data Assimilation System of JMA. Contour interval is 1°C (top) and 0.5°C (bottom). Values greater than 28°C in the top panel are shaded. In the bottom panel, values greater than 1°C are shaded and values less than -1°C are spotted. Anomalies are computed from 1987-2000 base period means.



第 23 図　太平洋月平均海面水位偏差図 （2002 年 2 月）

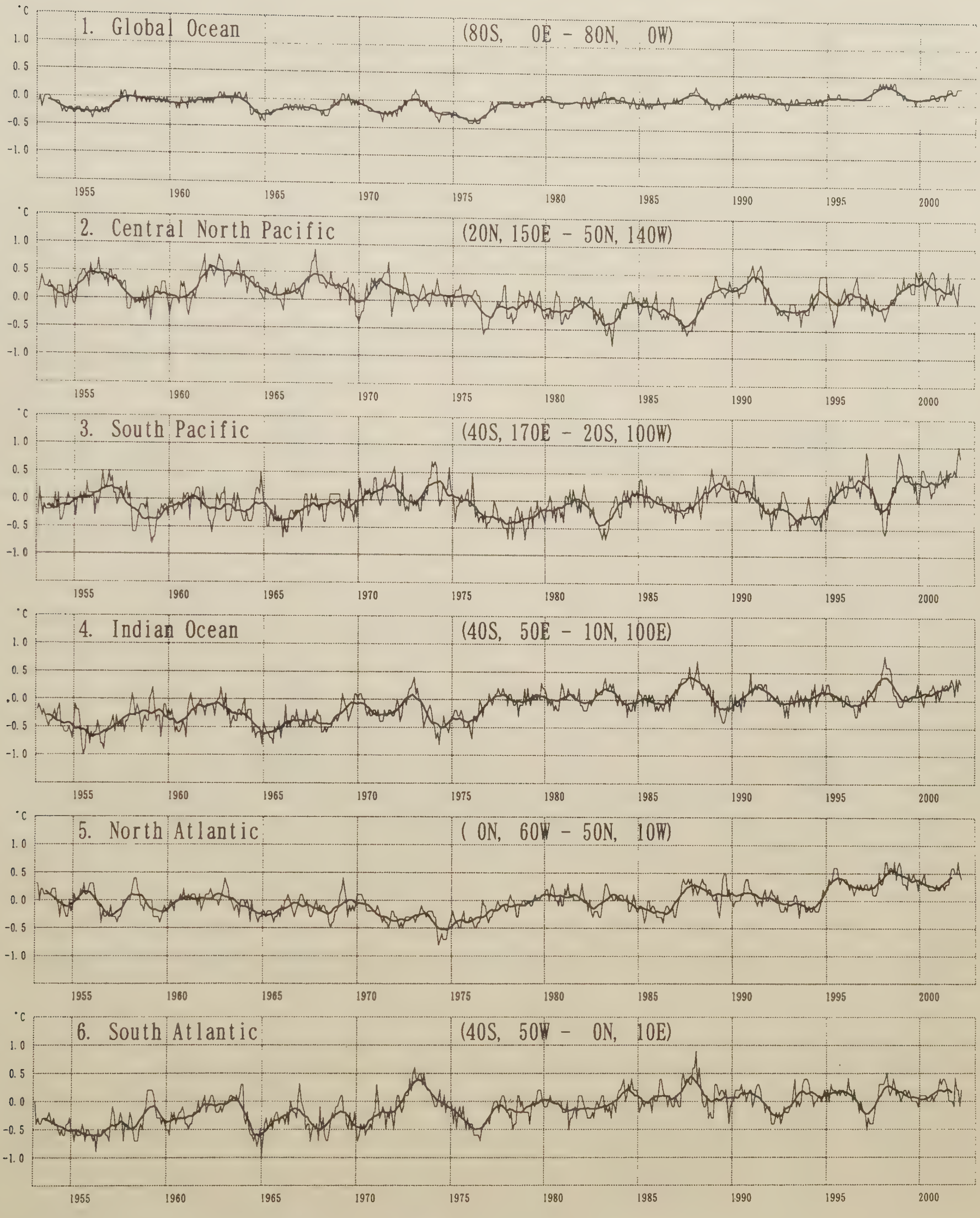
Fig. 23　Monthly sea level anomalies for February 2002 obtained from mean sea level (1975-1995) adjusted for atmospheric pressure. This figure is prepared by the SOC of ISLP-PAC, Department of Oceanography, University of Hawaii.



第 24 図　全球月平均海面高度偏差図 （2002 年 2 月）

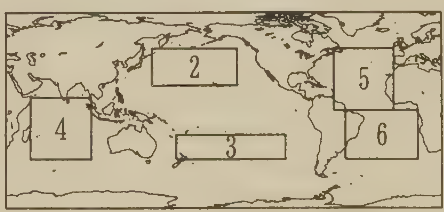
Fig. 24　Monthly sea surface height anomalies in the global ocean derived from the altimeter data of TOPEX/POSEIDON for February 2002. Contour interval is 5 cm. Positive anomalies exceeding +5 cm are shaded and negative anomalies exceeding -5 cm are spotted. Anomalies are computed from 1993-1998 base period means.

Long-term Variation of Monthly Mean SST Anomalies

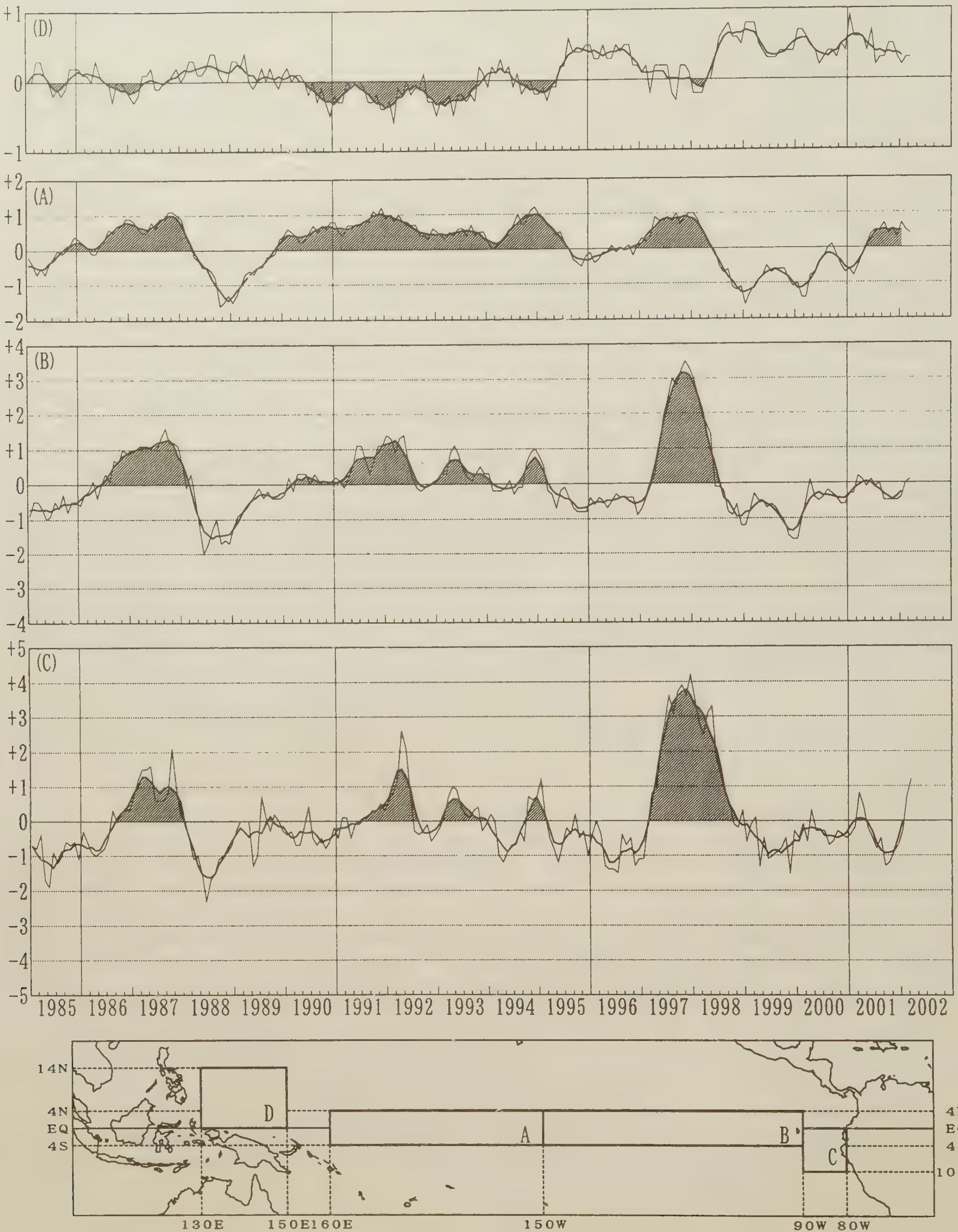


第25図 海域平均海面水温偏差の長期変動

Fig. 25 Long-term variations of monthly mean sea surface temperature anomalies (°C) for the areas shown in the right panel. Anomalies are computed from the JMA climatology (1971-2000). Thin lines show the monthly mean and thick lines their 13-month running means.



Time Series of Tropical Pacific SST Anomalies



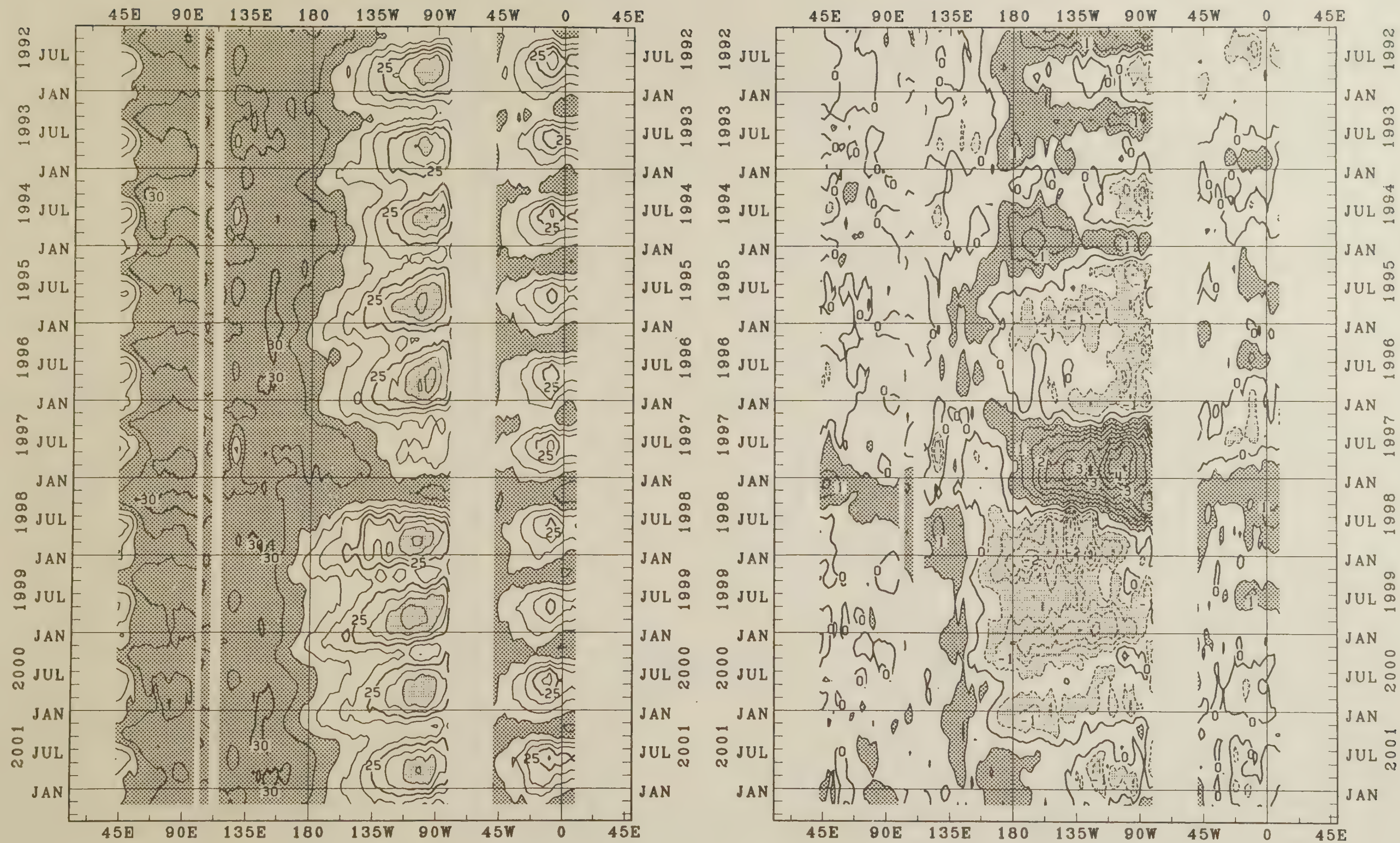
第26図　太平洋熱帯域の海面水温偏差時系列図

Fig. 26 Time series of monthly mean SST anomalies (°C) in the tropical Pacific Ocean for the areas indicated at the bottom panel. Thin lines show the monthly means and thick lines their 5-month running means. Positive anomalies (A, B, C) and negative anomalies (D) are shaded. Anomalies are computed from the JMA climatology (1971-2000).

MONTH YEAR	SEA SURFACE TEMPERATURE AND ANOMALY (°C) REGION D 14N-EQ 130E-150E		REGION A 4N-4S 160E-150W		REGION B 4N-4S 150W-90W		REGION C EQ-10S 90W-80W		SOI	SEA LEVEL PRESSURE ANOMALY (hPa) TAHITI 17-33S 149-37W	DARWIN 12-24S 130-52E
JAN 00	29.2	0.7	27.0	-1.0	23.8	-1.6	24.0	-0.5	0.5	1.2	0.1
FEB 00	29.0	0.7	26.6	-1.4	25.3	-1.0	25.9	-0.1	1.1	2.6	-0.3
MAR 00	29.1	0.6	26.7	-1.4	26.6	-0.5	25.7	-0.6	1.1	1.6	-0.6
APR 00	29.3	0.5	27.4	-0.8	27.3	0.1	25.7	0.3	1.3	1.0	-1.1
MAY 00	29.7	0.4	27.9	-0.7	26.5	-0.4	24.0	-0.3	0.3	0.8	0.4
JUN 00	29.6	0.2	28.1	-0.4	25.7	-0.5	22.6	-0.3	-0.3	0.3	0.8
JUL 00	29.6	0.3	28.2	-0.3	25.0	-0.4	21.6	-0.3	-0.3	-0.5	0.0
AUG 00	29.6	0.4	28.4	0.0	24.5	-0.2	20.2	-0.7	0.6	0.2	-0.9
SEP 00	29.7	0.4	28.5	0.1	24.4	-0.3	19.9	-0.6	0.9	1.5	-0.2
OCT 00	29.7	0.3	28.2	-0.2	24.3	-0.4	20.6	-0.3	1.0	0.3	-1.5
NOV 00	29.8	0.5	27.9	-0.5	24.1	-0.6	21.4	-0.4	1.8	1.2	-2.3
DEC 00	29.4	0.4	27.5	-0.7	24.4	-0.6	22.4	-0.5	0.9	-0.9	-2.6
JAN 01	29.4	0.9	27.4	-0.6	25.1	-0.3	24.1	-0.4	0.8	2.5	0.6
FEB 01	28.9	0.6	27.2	-0.8	26.0	-0.3	25.8	-0.2	1.0	-0.4	-3.2
MAR 01	29.1	0.6	27.6	-0.5	27.3	0.2	27.1	0.8	0.8	1.3	-0.2
APR 01	29.4	0.6	28.0	-0.2	27.3	0.1	25.8	0.4	0.1	-0.1	-0.3
MAY 01	29.7	0.4	28.7	0.1	26.8	-0.1	24.1	-0.2	-0.7	-0.2	0.9
JUN 01	30.1	0.7	28.9	0.4	26.3	0.1	22.4	-0.5	0.2	-0.2	-0.5
JUL 01	29.5	0.2	29.0	0.5	25.3	-0.1	21.1	-0.8	-0.2	-0.1	0.3
AUG 01	29.5	0.3	28.9	0.5	24.7	0.0	20.4	-0.5	-0.7	-0.9	0.1
SEP 01	29.6	0.3	29.1	0.7	24.2	-0.5	19.2	-1.3	0.1	-0.2	-0.4
OCT 01	29.9	0.5	28.8	0.4	24.2	-0.5	19.7	-1.2	-0.1	-0.9	-0.9
NOV 01	29.8	0.5	28.9	0.5	24.2	-0.5	20.9	-0.9	0.6	0.7	-0.4
DEC 01	29.3	0.3	28.5	0.3	24.5	-0.5	22.2	-0.7	-0.8	-1.2	0.3
JAN 02	28.7	0.2	28.7	0.7	25.0	-0.4	24.2	-0.3	0.3	1.3	0.7
FEB 02	28.6	0.3	28.5	0.5	26.3	0.0	26.7	0.7	0.7	1.5	-0.2
MAR 02	28.8	0.3	28.5	0.4	27.2	0.1	27.5	1.2	-0.2	0.4	1.0

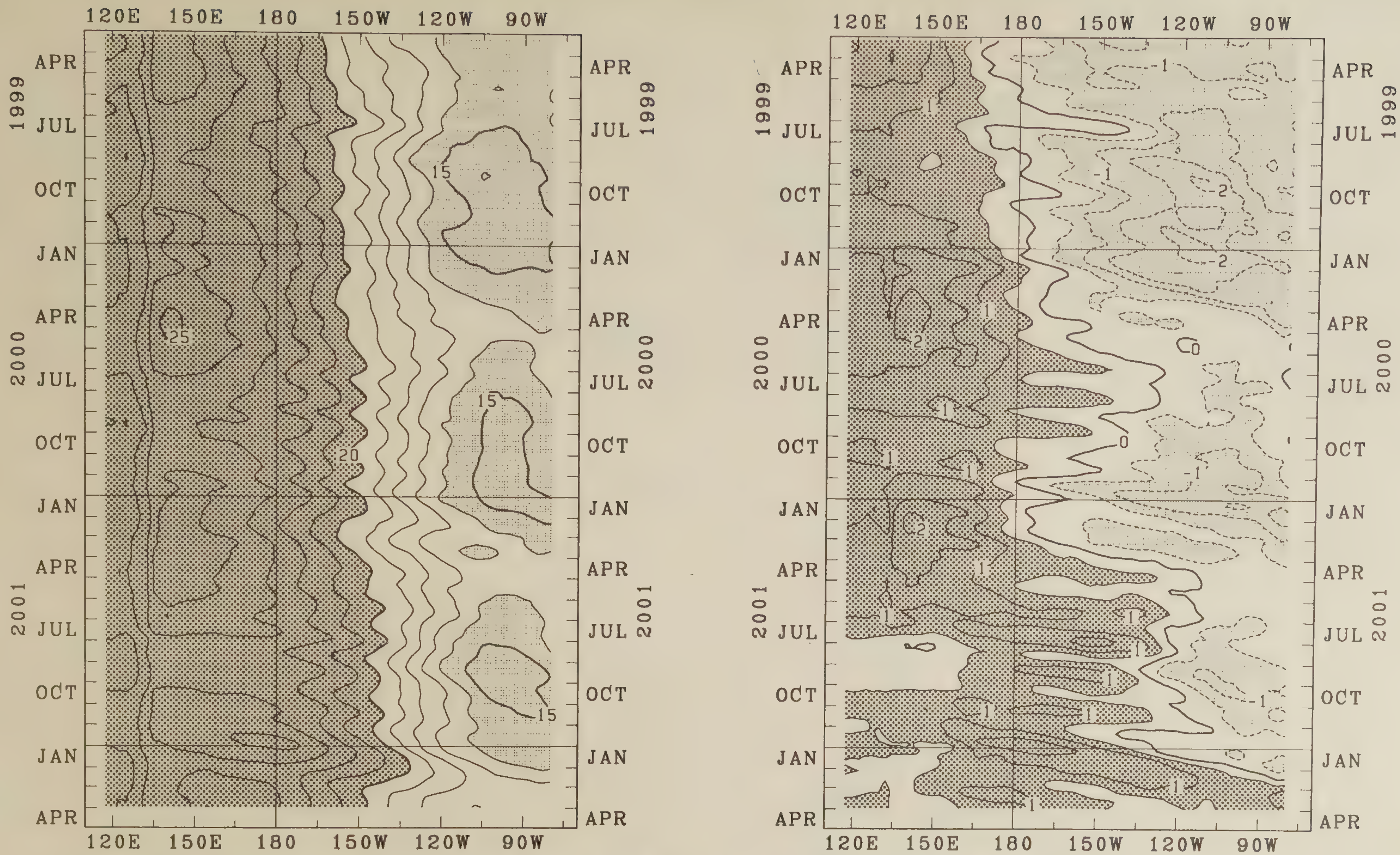
第1表　太平洋熱帯域の大気及び海洋の監視指数

Table 1 Atmospheric and oceanic monitoring indices in the tropical Pacific Ocean



第 27 図　赤道に沿った海面水温（左）および偏差（右）の時間-経度断面図

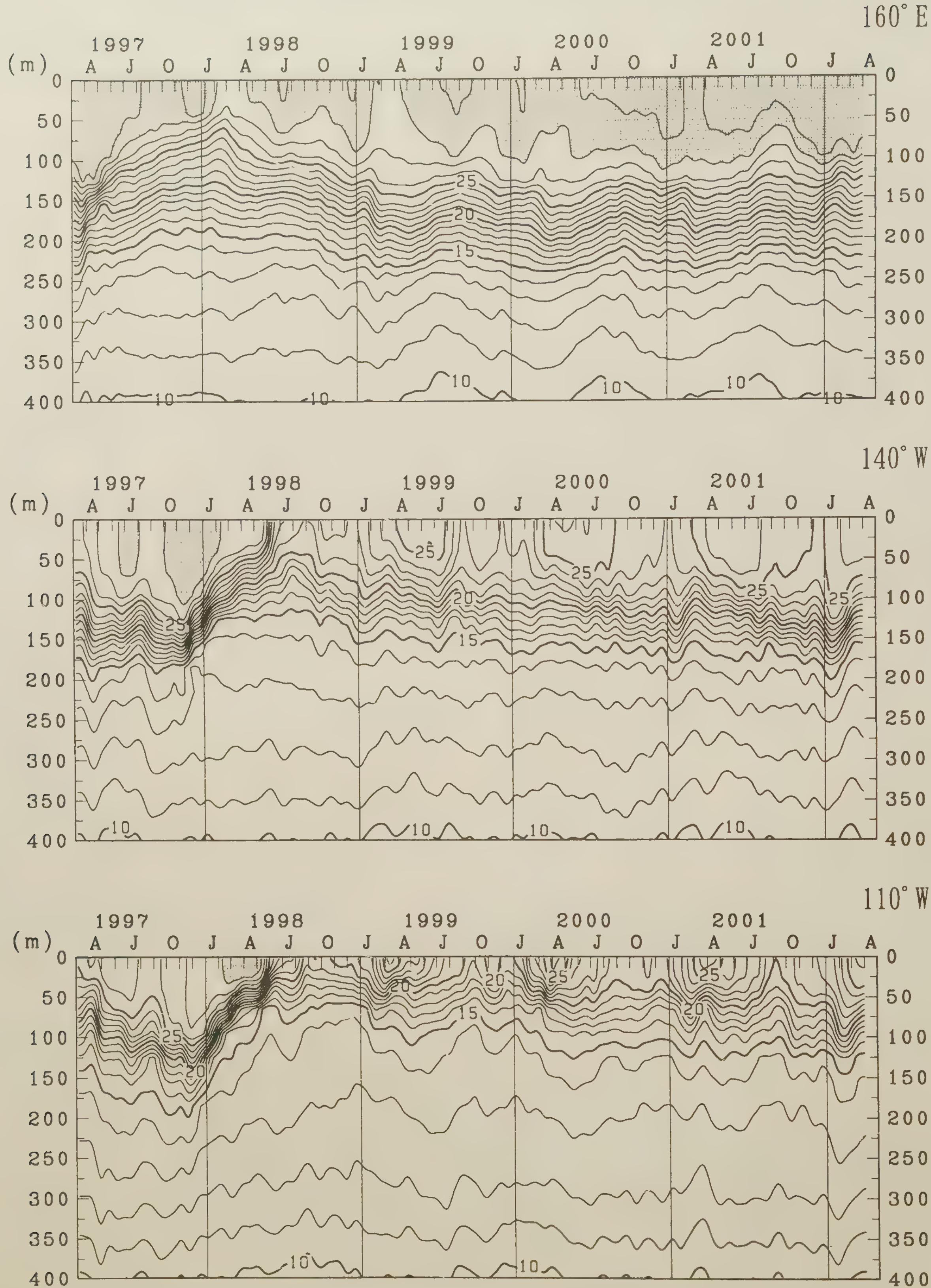
Fig. 27　Time-longitude sections of SSTs (left) and anomalies (right) along the equator (2 °N-2 °S) in the global ocean. Contour interval is 1 °C (left) and 0.5 °C (right). Values greater than 28 °C are shaded and values less than 23 °C are spotted in the left panel. Dashed contours indicate negative anomalies in the right panel. Anomalies are computed from 1971-2000 base period means.



第28図　太平洋の赤道に沿う海洋表層の貯熱量（左）及び偏差（右）の時間－経度断面図

Fig. 28 Time-longitude sections of ocean heat content in the upper 260 m along the equator (left) and anomalies (right) in the Pacific Ocean. Data are derived from the Ocean Data Assimilation System of JMA. Contour interval is 1°C (left) and 0.5°C (right). Values greater than 20°C are shaded and values less than 16°C are spotted in the left panel. Dashed contours indicate negative anomalies in the right panel. Anomalies are computed from 1987-2000 base period means.

Time-depth Sections of Equatorial Subsurface Temperature



第29図　太平洋赤道域の表層水温の時間－深度断面図

（上：西部、中：中部、下：東部）

Fig. 29 Time-depth sections of equatorial subsurface temperature for the western Pacific (top, 160°E), the central Pacific (middle, 140°W) and the eastern Pacific (bottom, 110°W). Data are derived from the Ocean Data Assimilation System of JMA. Contour interval is 1°C. Values greater than 28°C are shaded.

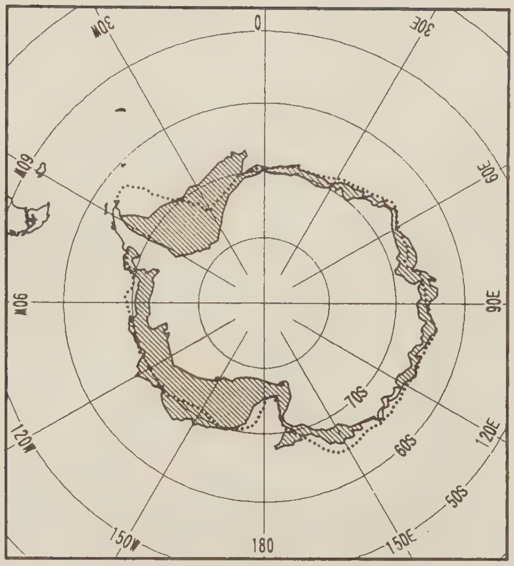


第30-1図　北極域の海氷図（2002年 3月15日）

Fig.30-1 Sea ice chart in the Arctic on 15 Mar. 2002.

The shaded area represents the sea ice extent. The dotted line denotes the mean ice edge averaged for the period from 1972 through 1990.

The data source is the National Ice Center (USA).

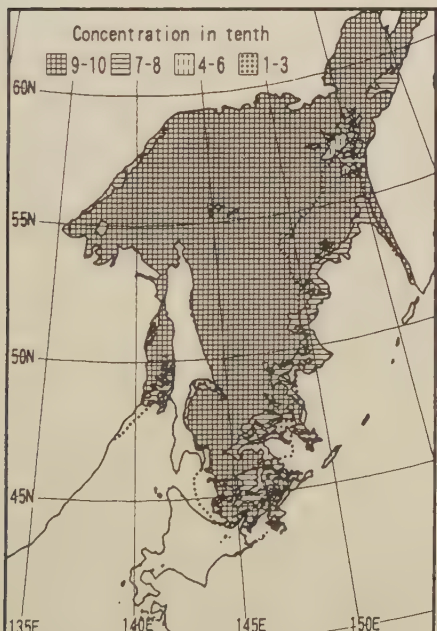


第30-2図　南極域の海氷図（2002年 3月15日）

Fig.30-2 Sea ice chart in the Antarctic on 15 Mar. 2002.

The shaded area represents the sea ice extent. The dotted line denotes the mean ice edge averaged for the period from 1973 through 1990.

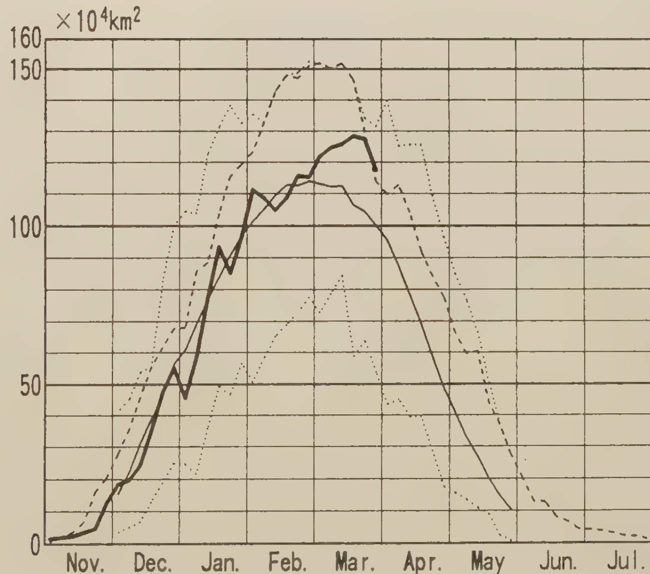
The data source is the National Ice Center (USA).



第30-3図 オホーツク海の海氷図（2002年 3月15日）

Fig.30-3 Sea ice chart in the Sea of Okhotsk on 15 Mar. 2002.

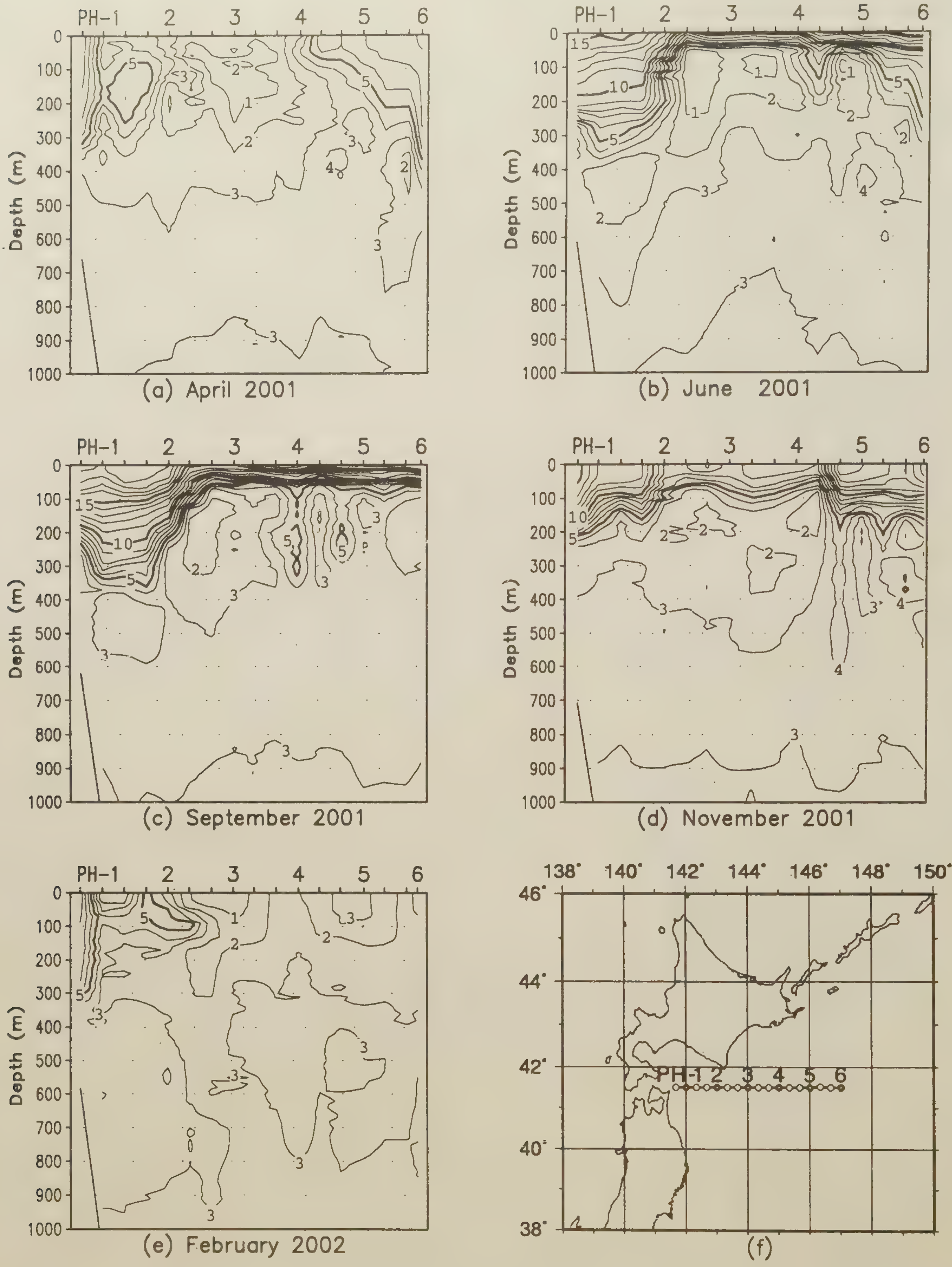
The dotted line denotes the mean ice edge averaged for the period from 1971 through 2000.



第30-4図 オホーツク海の海氷域面積

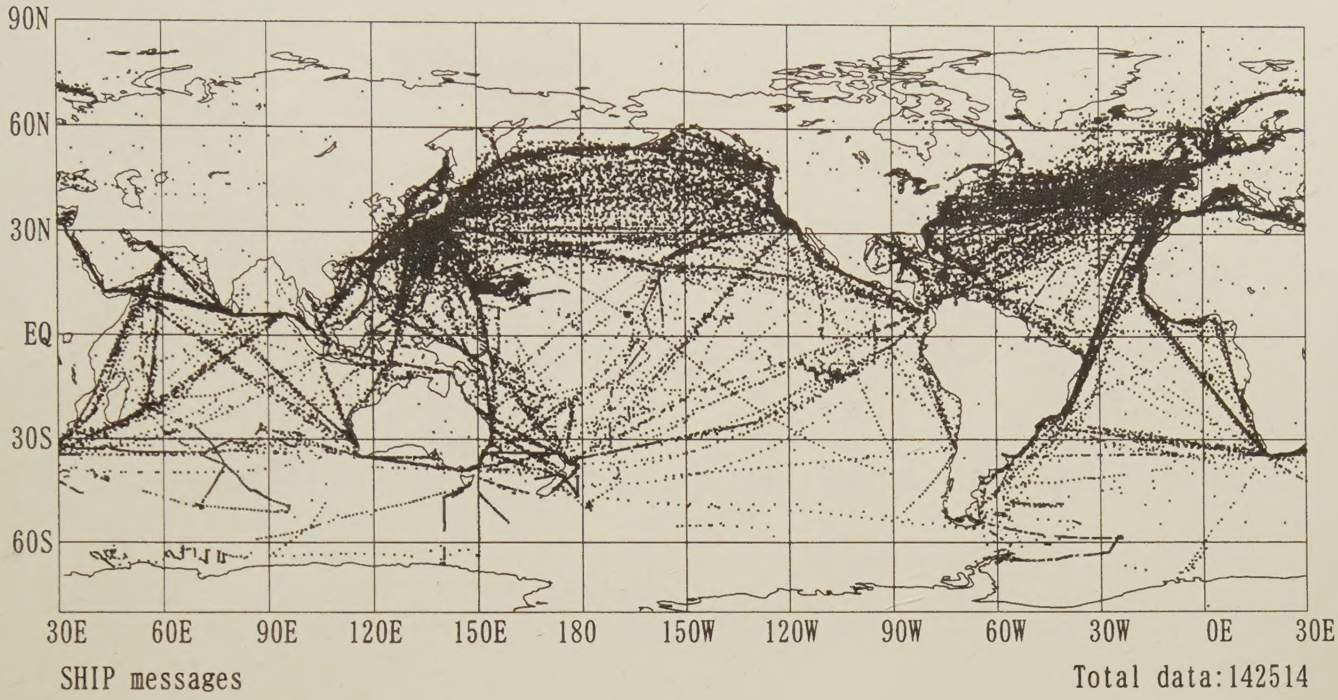
Fig.30-4 Time-series of 5-day sea ice area in the Sea of Okhotsk.

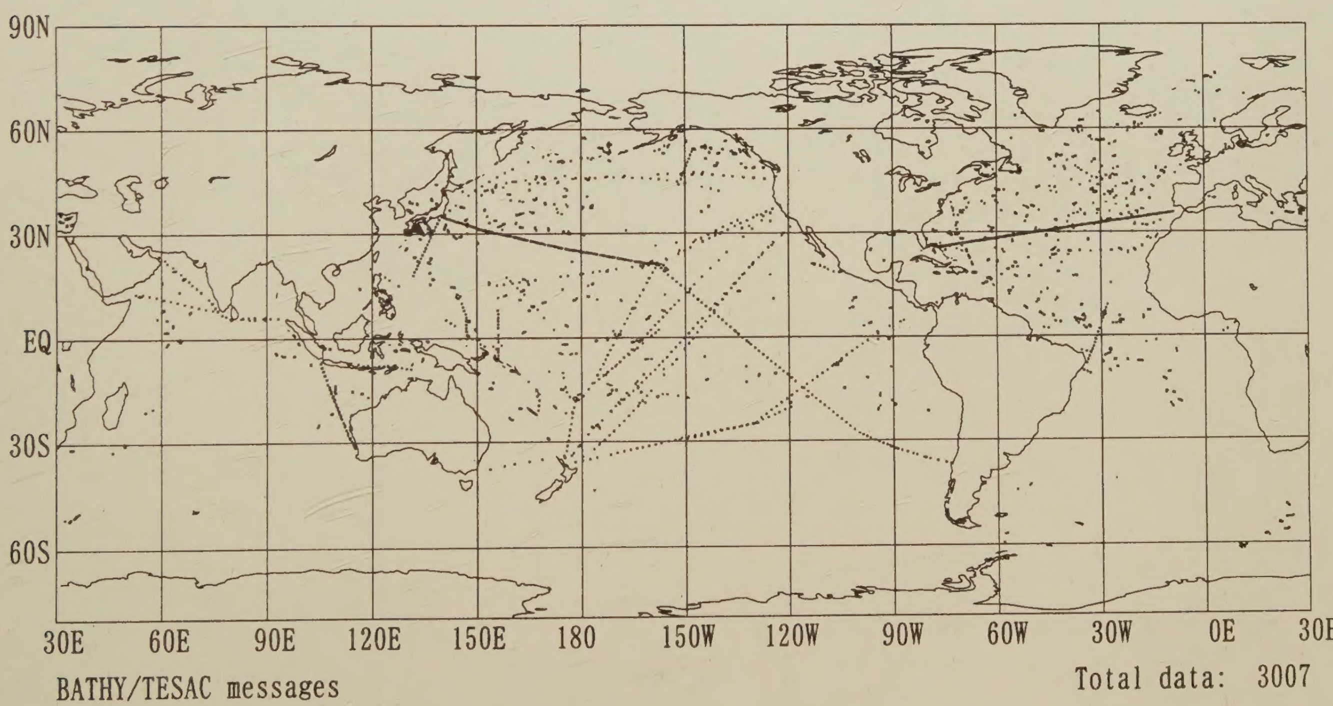
- ━━━━━ : current season (2001/2002)
- ――――― : mean extent (1971–2000)
- ·········· : maximum or minimum extent (1971–2001)
- - - - - - : last season (2000/2001)



第 31 図 函館海洋気象台高風丸によるPH線に沿った水温鉛直断面図. (a) 2001年4月、(b) 2001年6月、(c) 2001年9月、(d) 2001年11月、(e) 2002年2月、(f) PH線の位置図

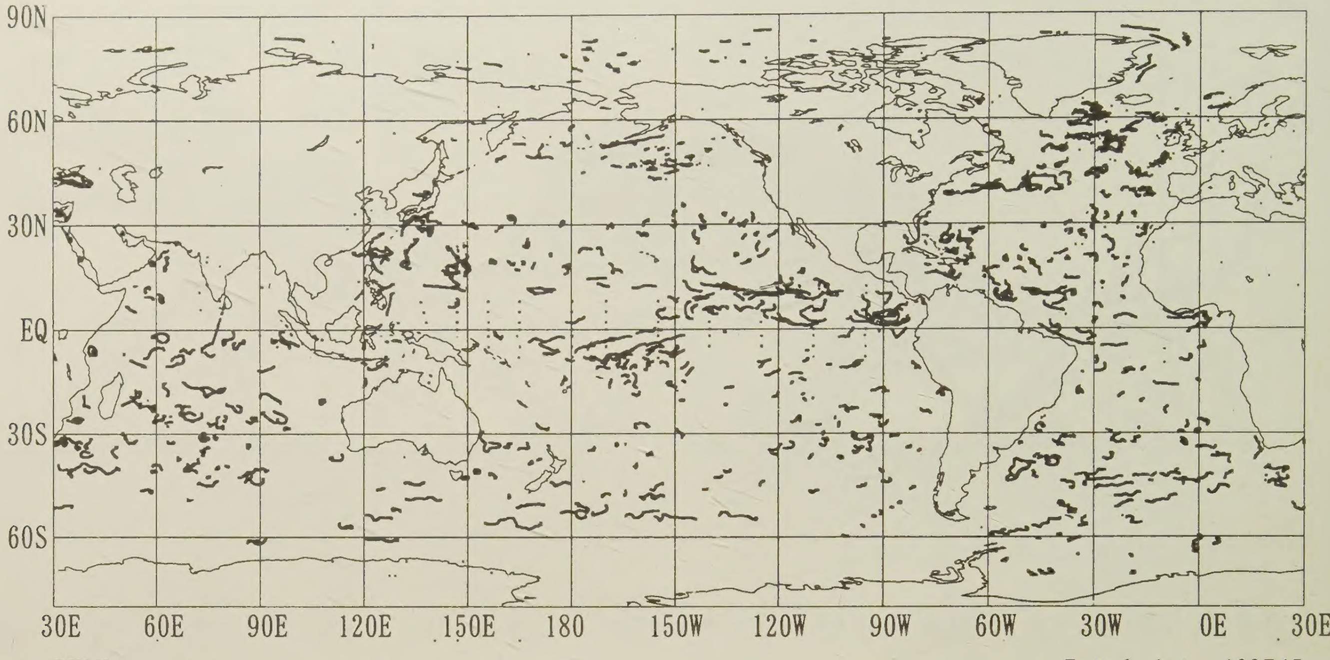
Fig. 31 Vertical sections of temperature (℃) along the PH line observed by R/V Kofu maru of Hakodate Marine Observatory of the Japan Meteorological Agency. (a) April 2001, (b) June 2001, (c) September 2001, (d) November 2001, (e) February 2002, (f) Location of the PH line.



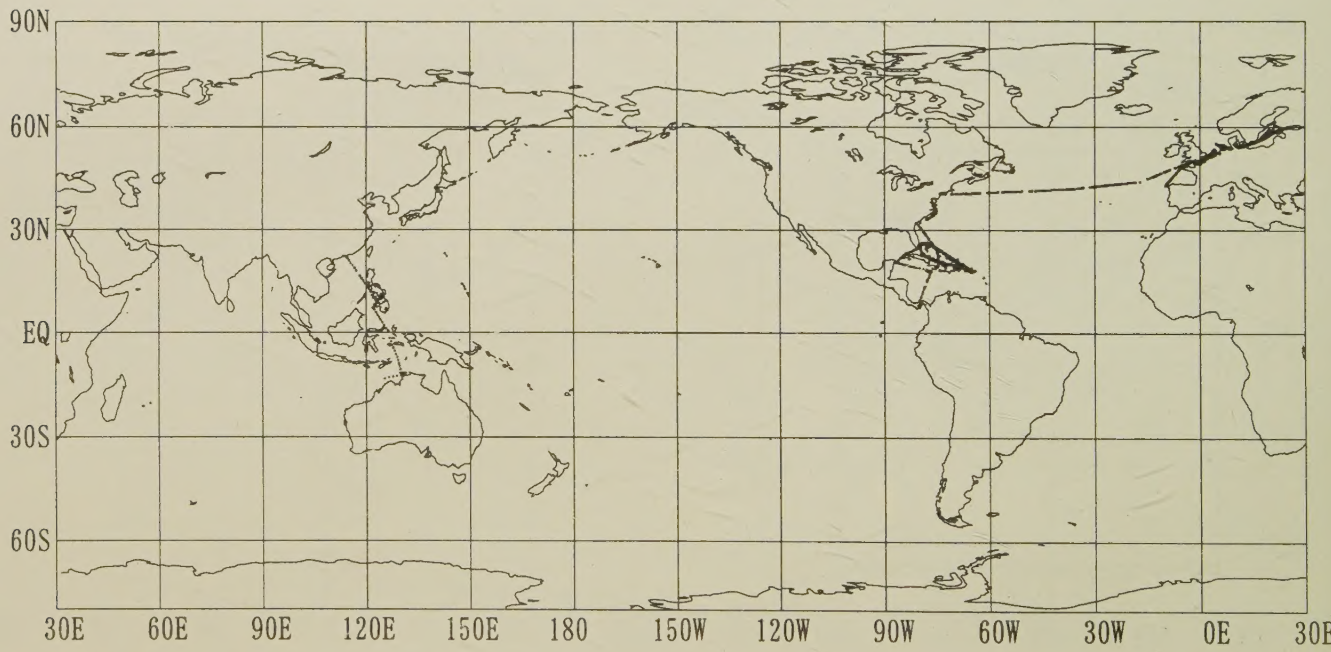


第32-1図　測点分布図(2002年 3月)

Fig. 32-1 Geographical distribution of SHIP messages (SST data, top) and BATHY/TESAC messages (subsurface temperature data, bottom) for MAR 2002.



BUOY messages　　Total data:460745



TRACKOB messages　　Total data: 1388

第32-2図　測点分布図(2002年 3月)

Fig. 32-2 Geographical distribution of BUOY messages (buoy drift and SST data, top) and TRACKOB messages (ship drift and SST data, bottom) for MAR 2002.

気　象　庁　海　洋　月　報

Monthly Ocean Report

March 2002 (No. 111)

本月報掲載の 2002 年 3 月のプロダクトには、気象庁が観測したデータ及び GTS（全球気象通信網）を通じて入手した国際気象通報式による通報のほか、下記の機関等から提供いただいたデータを使用しています。御礼申し上げます。

防衛庁、水産庁、航海訓練所、海上保安庁

水産総合研究センター

海洋科学技術センター、（社）漁業情報サービスセンター

北海道大学、東北大学、鹿児島大学

水産試験場等（北海道、青森県、岩手県、宮城県、山形県、福島県、茨城県、東京都、福井県、静岡県、三重県、京都府、和歌山県、島根県、山口県、徳島県、佐賀県、熊本県）

（順不同）

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